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ORIGINAL ARTICLES.

(No paper published or to be published in any other medical journal will be accepted for this department. All papers must be in the hands of the Editors on the tenth day of the month preceding that in which they are expected to appear. Reprints may be had at reasonable rates if a WRITTEN order for the same accompany the paper.)

ACUTE OSTEOMYELITIS IN CHILDREN, WITH REPORT OF CASES.*

By DRS. J. C. WILLIS, SR., and JR.

Acute infective osteomyelitis is one of the most common, serious, surgical diseases incident to child hood, and by far the most important and most common acute inflamatory disease of bone. Nevertheless, it is one of the few surgical affections in which there has been little or no progress made in the diagnosis and treatment within the past twenty years, for it is still being diagnosed and treated as acute articular rheumatism, poliomyelitis, or some other painful disturbance of the limb or joint until the opportunity for effective primary treatment has passed when, as a matter of fact, if we are to obtain the desired results in these cases, there should be no delay in making a diagnosis, if possible, and instituting proper surgical treatment for their relief.

Unfortunately, the X-ray, that has done and is still doing, so much in assisting us in making diagnoses in practically all other bone injuries or diseases, is of no value to us as a diag-

*Read before the Louisiana State Medical Society Meeting, April 11-13, 1922.

nostic measure in this affection at a time when it is extremely important that a correct diagnosis should be made. In fact, an X-ray examination may result in actual harm, as it certainly will, if its findings in this affection in its early stages are depended upon, for such dependence is false security and causes valuable time to be lost when it couldn't be afforded; for to wait until there is bone destruction with the accompanying abscess formation of the soft parts is not making a diagnosis of the disease but its destructive results, and no case, if it can possibly be avoided, should be allowed to reach this stage before operative measures are instituted.

To emphasize what I have just said I need only to call your attention to the paper of Pfeiffer which he recently read before the Philadelphia Pediatric Society. In this paper he epitomized and emphasized the problem very completely in making the statement that in a series of thirty-five cases taken from the records of the University Hospital there was a mortality of 14.3% and that a number of others were desperately ill; and excluding the cases that died, the average duration of treatment in the hospital was five months. He stated further that notwithstanding this prolonged treatment only four left the hospital cured, the others being sent either to the seashore or to their homes to be treated as ambulatory cases. In this series more than one-third had been erroneously treated before admission to the hospital, six for acute rheumatism, four for abscess, one for dislocation, and one for fracture. When we consider that this record is from one of the largest and best appointed hospitals in a medical center like Philadelphia it is very evident that either the diagnosis is extremely difficult or that the profession is not acting on the knowledge that acute osteomyelitis is an emergency surgical condition. Evidently the most frequent and serious error is to consider the affection as a disease of the joint or soft parts and treat it as a medical case until it is too late for proper surgical interference. This, no doubt, is due to the fact that a large proportion of the infections have their beginning in the epiphyseal end of the long bones so near the joint that it could very easily be mistaken primarily for an infection of the joint, when, in reality, the epiphysis is practically never primarily the infected point but, unfortunately, frequently becomes the victim of neglected or badly managed cases; for these are the ones in which

the epiphysis ultimately becomes seriously involved and leaves the patient a permanent cripple provided, of course, he escapes with his life.

Acute osteomyelitis is pre-eminently a disease of childhood and is an acute suppuration of bone due to the lodgment and growth of pyogenic organisms in the bone marrow; and while it prefers the diaphysis of the long bones near the epiphysis no bone of the body is exempt.

And in considering the etiology, while unquestionably the disease is always an infection, one must speak in terms both of infection and immunity, as no doubt, like many other infective diseases, the depression of the immune forces of the body plays a considerable role in predisposing to the attack. To just what extent this is true we are unable to estimate, as many cases are observed in children who are apparently in good health at the time of infection. Of course, this may be more apparent than real as there may be some temporary or transient depression or a natural weakness of immunity of which we have no way of knowing, but unquestionably osteomyelitis is a hæmatogenous infection and bacteria must precede localization, and as pointed out by Pfeiffer in his admirable paper, "the source of the bacteria in many cases may be surmised with a great degree of probability," and he mentions as antecedent conditions of apparent importance "tonsilitis, pharyngitis, bronchitis, influenza, pneumonia, gastric and enteric disturbances, pustular conditions of the skin and minor infections of transient origin." And he further states that in his opinion "many of the febrile disturbances of children which are of short duration and usually not dignified by a diagnosis excepting a popular tag for family consumption are associated with a transcient bacteremia, for it has been demonstrated that bacteria enter the circulation much more frequently than was formerly supposed." Under these primary conditions we can very well understand how the infective agent under favorable conditions may find lodgement and a suitable culture medium for its growth and development.

Almost any organism may be found in osteomyelitis but the large majority of cases are due to the presence of pyogenic cocci, and the most common infecting micro-organism is the staphylococcus aureus, more rarely the albus and citreus and occasionally the streptococcus, whieh alone or in combination with the staphy-

lococcus, produces the most virulent and destructive types. Certain conditions would seem to induce local implantations of the circulating infective agents. One of the most common, no doubt, is trauma. In the Pfeiffer series of cases 43% gave a direct history of traumatism, usually not an injury of sufficient force to fracture the bone but a sudden force with quick deformation of the medullary arches can injure and even fracture these delicate supports without fracturing the cortical bone thus lowering the resistance at the point of injury.

Faulty nutrition, exposure to cold, and extreme fatigue must also be considered as factors in preparing the soil while previous infections, especially the exanthemata, typhoid, pneumonia, etc., often provide the invading organisms. It is much more common in boys than in girls which would naturally tend to emphasize the importance of trauma as an etiological factor in producing the disease. And while no bone is exempt, it is usually one of the long bones, preferably the lower end of the femur; the next in order is the tibia, the infection of these two predominating over all others. According to Peters out of a total of 1,250 cases tabulated nearly 900 were instances in which the femur and tibia were involved. Next in frequency with these bones in the order named were the humerus, the radius, the fibula, the pelvis, ulna and the lower jaw. And while there may be some difference of opinion in regard to the point at which the disease commences its manifestations, some contending that the medulla is the point of primary infection, and others that the infection commences in the cancellous tissue on the expansive extremities of the long bone near the epiphyseal line, regarding the main features of the pathological anatomy of acute osteomyelitis all authors and writers are practically agreed. Even though the extreme end of the bone near the epiphyseal line may be the point of primary infection evidently there is practically a simultaneous involvement of the bone marrow and the supurative process assumes distinct characteristics because of the anatomical peculiarities of the tissue involved. Its virulence and extensive ravages are inevitable when we consider the nature of the infection, the kind of tissue affected, and the dense bony walls which imprison the products of supuration.

Naturally, the question arises: What are the leading characteristic symptoms of this affection? Certainly not the symp-

toms so often described and looked for, namely: Redness, swelling, superficial tenderness and fluctuation; for these are not the symptoms of acute osteomyelitis, but its complications and the results occurring only after the inflammatory process has broken through its bony confines and extended to the soft parts, and there can be no improvement in our present treatment and end results until we learn to diagnose the affection and not its disastrous results. Pain, perhaps, is one of the most common and consistent early symptoms, its peculiar characteristic in this condition being that it is neither superficial nor definitely localized at first but of deep burning sensation definitely increased by persistent pressure over the infected area. Sheldon, in a most admirable paper on the diagnosis of this affection emphasizes the importance of tenderness over the suspected area during the primary stop which can be elicited only by deep pressure when after a few seconds the pain suddenly becoming very intense.

Another important symptom is loss of function in the affected limb which is usually pronounced from the very beginning, the slightest movement being accompanied by extreme pain. The temperature rises rapidly to a high point, 103 to 105, and is of a continuous type with little or no variation, and white blood count shows invariably a marked leucocytosis.

Among the affections from which acute osteomyelitis must be differentiated, no doubt acute articular rheumatism is the one with which it is most often confounded for the reason that these affections in their acute stages have a number of symptoms that are more or less common to both; but in making a differential diagnosis we should bear in mind that osteomyelitis is primarily extra-articular, with a single point of infection, while acute articular rheumatism is an inflammatory involvement of the articular surfaces within the joint and is usually multiple.

Acute poliomyelitis as it appears in children is another affection which must always be considered and excluded as far as possible in making our diagnosis. To quote Sheldon, however, "It is not often that poliomyelitis is diagnosed as osteomyelitis but many times the reverse is true; in the acute stages they have many symptoms in common and quite frequently they are confused."

As stated in the beginning, the X-ray is of little or no value to us in the critical stage of this affection except possibly in a negative way, as it may confirm the presence of a periosteal, tubercular or syphilitic disease or fracture.

The prognosis of acute osteomyelitis is always grave both as to life and limb, and it has been truly said that once the diagnosis is made it is the most surgical of all surgical diseases. Surgical interference should not only be prompt but should be complete. It is never expedient nor justifiable to simply incise the soft parts and periosteum; the canal should be opened freely so that the drainage may be complete; all dead and infected bone should be chiseled away and all pus and infected marrow should be removed with a bone curette; small perforated drainage tubes should be placed in position for flushing if needed, preferably with Dakin solution, and the wound packed with washed iodoform gauze, and external dressings and bandages applied. In many of the acute cases, on direct inspection, the trouble will appear to only affect the periosteum which will be found to be thickened and odematous, and separate very readily from the shaft of the bone, but the real trouble is in the medullary canal and should be treated accordingly.

SUMMARY.

1. There is no disease of which it can be said more truly that the treatment is wholly surgical; medical treatment of the patient may be required, but not of the disease itself.

2. The earlier the operation the better the outlook for life and limb.

3. The essential object of surgical treatment is prompt and efficient drainage of the affected medullary cavity.

4. Present experience shows too often errors in diagnosis, delay in treatment, and insufficient primary operative procedure.

Case 1. H. B., age 11, female, white.

Complaint: Pain in left leg below the knee.

Past illness: Usual diseases of childhood. Had pneumonia five years ago. Tonsils removed two years ago.

Present illness: On February 3, 1922, while at school, leg began to pain her and the same evening became chilly and fever developed. Fever ran as high as 104 degrees Fahrenheit. During this time it never left her entirely. Leg continued to pain her severely. Entered the hospital February 9, 1922.

Physical examination: Temperature 104, pulse 130, respiration 22. Well developed child. Head, chest and abdomen negative. Extreme tenderness over tibia just below the knee. No redness or

swelling present. Urine negative. Leucocyte count 18,500. X-ray examination was negative for bone disease.

Operated upon the day of entrance. During the operation the periosteum was closely adhered to the bone. No evidence of bone destruction could be detected by the eye, but when a hole was drilled in the tibia small particle of pus began to exude. Extirpation of anterior surface of tibia was performed and wound packed with iodoform gauze.

Following the operation the fever ran high for three days, then it gradually began to subside and on February 16 it had entirely disappeared. On March 8, 1922, we decided to curette the granulation tissue to let a blood clot form, thereby hastening the process of closing the wound. Following this procedure we had splendid results and she was eventually dismissed from hospital as ambulatory case March 22, 1922.

Case 2. F. G. H., age 4½ months, male, white.

Complaint: High temperature with pain and swelling in right forearm.

Past illness: Always been healthy.

Present illness: Became ill January 8, 1922, with high temperature and pain evidently in right forearm with loss of function. Fever and fretfulness persisted with rigidity and lack of movement in affected forearm.

Physical examination: Temperature 103, pulse 138, respiration 24. Child large for his age and well nourished. Heart, lungs and abdomen negative. Right forearm slightly swollen and very painful. Any movement or change of position causes him to cry out. Pain and swelling appeared to be more marked over the ulna near wrist joint. X-ray examination was made January 11, 1922, and report showed negative for bone disease. Notwithstanding X-ray report, operated upon January 13, 1922. Found ulna was hard, dry and a portion of it was necrosed. After removing necrosed portion a small amount of pus exuded. Wound packed with iodoform gauze in usual manner.

Following the operation the patient's temperature gradually subsided and disappeared on the fifth day. Also the discharge ceased on the seventh day. The child left the hospital January 21, 1922.

On January 23, 1922, the patient re-entered the hospital manifesting the same symptoms that he originally had, except the redness, swelling and tenderness were more marked. We re-operated upon him shortly after his entrance and excised the whole shaft of the ulna, leaving only the epipyseal ends of the bone with periosteum intact. Following the last operation he made a very satisfactory recovery. He continued to do well until February 2, 1922, at which time he developed a pocket of pus on the radial side of the forearm. This was incised and a small wick drain left in for four days, after which it readily healed.

Four weeks after the excision of the shaft of the ulna an X-ray picture revealed that the shaft of the bone had entirely re-formed. When last seen, April 2, 1922, the wound had entirely healed.

Case 3. C. E., age 10, male, white.

Complaint: Pain in right leg below the knee.

Past illness: Usual diseases of childhood; always been unusually healthy child.

Present illness: On awakening April 2, 1921, noticed a pain in right leg. The following evening pain became very severe and temperature rose to 103 degrees F. At this time the pain in leg had become very intense. He gave no history of trauma.

Physical examination: Came under our observation April 7, 1921, five days after onset of attack. Temperature 103, pulse 130, respiration 20. Fairly well nourished child. Head, chest and abdomen negative. The right leg below the knee was slightly swollen and tender on deep pressure, and was apparently more marked over tibia. Urine negative. Leucocyte count 16,500. X-ray plates had already been made April 4, 1921, and reported negative for bone disease.

He was operated upon the evening of April 7, 1921, and during the operation found that the periosteum had become separated from tibia and contained about a half pint of pus. The bone was badly necrosed, as very extensive involvement of bone had already taken place. After extirpating a great portion of the tibia it was packed with gauze and closed in the usual manner. Following this operation his temperature slowly subsided and completely disappeared during the last week of May. On June 2, 1921, his fever began to reappear. On the fifth of June we decided an X-ray was necessary. X-ray plate revealed irregular area of bone destruction and bone production extending from the lower epiphysis to middle of upper third of right tibia. We operated again June 6, 1921, and curetted out the whole lower shaft of the tibia, leaving only the new bone shell and distol epiphyses intact. Following this last operation his recovery was so satisfactory that he was dismissed from hospital June 20, 1921.

Case 4. Baby H., age three years, female, white.

Complaint: Pain in left leg and right shoulder.

Past illness: Usual diseases of childhood.

Present illness: On January 24, 1922, the child fell and injured left leg. A few days following complained of pain in left leg which gradually grew worse. High temperature was marked and continuous. On February 14, 1922, right shoulder began to swell and became very painful.

Physical examination: Came under our observation February 16, 1922. Temperature 102 F., pulse 104, respiration 22. Child very emaciated. Heart, lung and abdomen negative. Left leg below the knee swollen. Small stab wound leading from tibia which constantly drained pus. Right shoulder, particularly over the deltoid muscle, was swollen and contained pus.

The shoulder was incised immediately on entrance to hospital and a large quantity of pus drained off. An incision over left tibia was increased, giving it freer drainage. Child's condition would not permit of more radical procedure. Child did fairly well for three days.

On February 20, 1922, patient began to discharge pus from both nostrils. On February 23, 1922, it developed characteristic symptoms of septic pneumonia. From then on it gradually grew worse and died March 5, 1922, of septic pneumonia.

DISCUSSION.

Dr. E. M. Ellis (Crowley, La.): I am very much delighted to hear this very exhaustive paper of Dr. Willis, because it deals with a subject that frightens to death the parent and the patient. To my mind there is no disease, as he has so clearly stated, that the doctor should be so prompt in dealing with radically. It has been my misfortune to see quite a few of these cases and quite a number of them to die. Of course, we see the cases late, often when they are in a moribund condition, especially children, but I think we as surgeons and physicians should be taught throughout the country that whenever a child has an acute pain in its limb, high temperature, rapid prostration, that a tentative diagnosis of ostemyelitis should be made, and as Dr. John B. Murphy so well stated, if you cannot do anything

else make an opening in the bone and let out the infection and probably save the child's life until it can have further surgical aid. If you have an infection of the femur, your prostration and intoxication is much more profound than in any of the other long bones. Whenever you have these symptoms at once proceed to make an opening in the bone. If it is properly done you have done no harm, but by all means as soon as the patient presents these symptoms go ahead with your surgical interference and you will very often save the child's life, whereas if you put off from twenty-four to forty-eight hours the patient will be overcome by the toxemia and it will be too late.

Another point is that while dealing with these cases surgically, if you have a patient brought to you who is overcome by the toxemia, as most of these cases are, do not try to do too much at one time. They do not bear surgical shock well, and if you undertake to make too radical an operation the first time you will lose your patient from shock. Go as far as you can safely the first time, because these cases nine times out of ten have to be repeatedly operated. Then later, as the patient recovers from the toxemia, continue the operation until you have succeeded in eradicating the infection. Do not forget that while you are dealing with an ostemyelitis in one bone, you often have a metastasis in another. I have had three such cases lately, so do not let it go too far. Then deal with these metastases just as you did with the original infection.

Dr. Peter B. Salatich (New Orleans): These cases suffer from violent toxemia and should be treated the same as a bad appendix. Do it under a local anesthetic. It is surprising how much you can do with young children under a local. Open the bone, allow the infection to subside, and then after the general toxemia and the necrosis going on has subsided, do your radical operation.

Dr. W. S. Rutledge (Ruston, La.): I think one of the main points is early diagnosis—that is a most important point. Of course, treatment is important, but early diagnosis, I think, is even more important. I have had quite a few cases myself and that is always the feeling I have had. I will never forget the first case I had, and if I had only diagnosed that case properly at first, it might have lived; but I waited too long. I think the main point is early diagnosis.

Dr. T. E. Wright (Monroe): Two points Dr. Willis brought out relative to location as well as to treatment. The location which predisposes to a diagnosis of acute articular rheumatism is the location just below the epiphysis in the area between the epiphysis and the shaft of the bone, in the comparatively avascular zone of the bone. The head of the bone is supplied by the metaphysial arteries, whereas in the shaft blood supply comes from the nutrient arteries. This zone just below the metaphysial area is comparatively avascular and is the original seat of infection.

In the treatment of this condition I do not see how a local anesthetic could be used, because, primarily, you are dealing with the child and, secondarily, you have to deal with a radical condition. Too much can be done as well as too little. Packing can be overdone which would predispose to lack of drainage and in a sense help out your metastatic process, not only through the bones, but also in the lung, under the skin, and in as many as six other bones.

Relative to the destruction of bone tissue during the primary process, ample drainage is to be held in mind. Some authorities have advised opening the bone by drill hole openings, but that will not work in all cases. Ample drainage with removal of not too much necrotic bone, a thorough washing out with Dakin's solution, will often be all that is necessary and that necrotic bone will offer a good framework for your new bone tissue to develop on.

Dr. J. C. Willis (closing): One thing on this point I wish to emphasize and that is, that the primary operation should be both as early and as complete as possible; at least as complete as may be necessary to meet the conditions of any given case. Of course, we should not unnecessarily jeopardize the lives of our little patients, but at the same time we should bear in mind that if a diagnosis is made early enough and the complete operation is done at the beginning there will be no necessity for any secondary operation, and that is the gist of the whole matter. Now, in regard to the question raised by Dr. Wright in reference to the circulation of the various parts of bone, it has been demonstrated that in the long bones of children the circulation has been divided into three groups, viz.: the diaphyseal, the epiphyseal and the metaphyseal. The group ascribed to the diaphysis draws its supply from the nutrient artery and terminates near the epiphyseal line without anastomizing directly with either of the other groups. And the arteries supplying the epiphysis, on the contrary, are derived from the various main trunks and these terminals do not communicate freely with the others, and the vessels composing the metaphyseal group are smaller and shorter than the others and enter the end of the shaft near the end of the diaphysis, with the same terminal characteristics as the others. Consequently each part is fairly independent of the others so far as circulation is concerned.

GLANDULAR FEVER.*

By S. CHAILLE JAMISON, M.D.

Introduction: This disease was first described by E. Pfeiffer in 1889, and was regarded by him as a distinct entity. Since that date, descriptions have appeared in the literature of Germany, France, England and the United States. The condition is not described in any of the prominent text books on medicine, although it is frequently mentioned where any of the adenopathies are described.

Definition: Glandular Fever is a disease of the lymphnodes, usually involving single groups of glands, such as the cervical, though more than one group may be involved, and occasionally all of the lymph glands of the body. The etiology and pathology are as yet unknown. It is more frequent in children than in adults.

Distribution: In all European countries and in North America the disease has been recognized and appears to be as common in cold as in warm climates.

Sex: Males and females equally affected.

Age: It is more common in childhood, but occurs frequently in young adult life and in late middle life. Cases in the aged have not been described.

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Pre-disposing Causes: There seems to be no particular reason for outbreaks of this disease. Epidemics have been described and it may be more than coincidence that attention and interest have been aroused following the two great pandemics of Influenza; however, as the pre-disposing causes of Influenza are unknown, this sheds no light on the cause leading to Glandular Fever.

Etiology: It has been claimed by many competent observers that almost as many different organisms cause Glandular Fever. Pfeiffer claimed to have isolated the Influenza bacillus from the glands and blood of patients suffering with this disease. In more recent times, the streptococcus has been cultivated from macerated glands, also pneomococci, dyptheriod bacilli and staphylococci. These conflicting reports force us to believe that the specific agent, if there be one at all, has not as yet been demonstrated.

Pathology: No definite pathology has been reported. Of course, chronic and acute inflammation have been frequently observed. In dealing with the adenopathies from the histological standpoint, we must bear certain facts in mind. The pathology of various glandular enlargements is only partially known; for instance, acute and chronic lymphatic leukæmia, Hodgkins' Disease, and that only where Dorothy Reed cells are present, *i. e.*, rather late in the disease, lympho-sarcoma, carcinoma, tuberculosis and syphilis, and that where these diseases cannot be definitely recognized, histology has reached its present limit. That the diseases mentioned above can be definitely recognized and excluded, is of enormous importance and value in the diagnosis of Glandular Fever. Except for the lymphatic glands, the other organs and tissues of the body seem singularly free of pathology except the kidneys, which are always involved by a sub-acute nephritis in the later stages of the disease.

Symptoms: Synonymous with early enlargement, pain and tenderness, of certain groups of lymph glands, there are the constitutional symptoms of malaise, fever, slight chilly sensations, anorexia, usually constipation; the glands involved are, first in order of frequency, those of the cervical region, particularly the group lying anterior to the sterno-cleido-mastoid muscle. These may be involved either bilaterally or unilaterally, the latter predominating. These are followed by enlargement of the

axilliary glands, either on one or both sides. Rarely are the axilliary glands of the opposite side involved when only one side of the cervical glands are diseased. Very much less frequently the inguinal and femoral glands are affected without other involvement, and lastly, general lymphatic enlargement has often been observed. Where any of these groups of glands are involved, it is essential to exclude any focus of infection, for we know that the lymph glands are the first line of defense against the dissemination of infection from a focus. When the cervical glands are involved, tonsilitis and oral sepsis must be carefully excluded. Where the axilliary glands are involved, any infection of the upper extremities must be excluded, and where the inguinal and femoral glands are enlarged, infections of the genital organs and of the lower extremities must be excluded.

A rare form of this disease is described as involving the mediastinal or the retro-peritoneal glands, or both. Where all of the glands of the body are involved, it would appear to be almost impossible to include foci of infection. It is common for one group of glands to become involved, the local and constitutional symptoms to subside, this to be followed by the involvement of further groups of glands, the return of the local and constitutional symptoms. This may continue until all of the glands of the body have been involved.

Temperature: Temperature is of an intermittent type, which may be at times as high as 103-104, and may last anywhere from a few hours to weeks or months. In the long continued forms, the febrile reactions occur in waves, presumably coinciding with an extension of the disease to other glands.

Blood Picture: The hemaglobin and red cell count show a moderate secondary anæmia while the white cell count demonstrates an increase in the number of white cells, varying from 11,000 to 25,000, with usually a moderate increase of the lymphocytes, usually not over 50% or 60% however, and never approaching the high figures of lymphatic leukæmia. No abnormal cells are present in the blood smear. In glandular fever, suppuration never occurs, and should it occur in a suspected case, the diagnosis of Glandular Fever cannot be made.

Diagnosis: Enlargement of the cervical glands is frequent with tonsilitis and aural sepsis, and it is entirely unjustifiable to diagnose Glandular Fever if these conditions exist, unless they are corrected and the glandular enlargement persists. I have

seen cases, and several have been reported in the literature, occurring in subjects whose tonsils had been removed and in whom dental examinations had excluded oral sepsis. The same is true of involvement of the inguinal and femoral glands, and the difficulty of excluding sub-acute infections in the female pelvic organs is too notorious to need comment. Before any glandular enlargements can be placed in the category of Glandular Fever, Hodgkins' Disease, Leukæmia, Tubercular Adenitis Malignancy, Plague and Syphilis must be excluded. Leukæmia can usually be excluded by the blood picture; Tubercular Adenitis by the physical examination; syphilis by the history and blood examinations; plague by cultures taken from the glands. The final diagnosis, however, must be made in the vast majority of cases, by the excision of a superficial gland and histological examination of this tissue; then, if those diseases which can be definitely recognized by the microscope are not present, a diagnosis of Glandular Fever may be literally forced upon us. It is evident then that a final diagnosis of Glandular Fever must rest on careful exclusion of all recognized adenopathies. It cannot be too strongly emphasized that unless a histological examination is made, the diagnosis of Glandular Fever is not justified, and as the removal of a small gland is a simple matter, and examination of the same available to all, it would appear that this is an easily surmountable obstacle.

The diagnosis of Glandular Fever where the mediastinal and retro-peritoneal glands are alone involved, presents great difficulties as a mere demonstration of enlargements of these glands by palpation of the abdominal glands or X-ray of the media stinal glands means nothing more than the pure anatomical fact that they are enlarged and it appears to me that only a tentative diagnosis is possible until the outcome of the case is known, recovery only partially confirming the diagnosis, while if death occurs, only an autopsy can prove the case.

Prognosis: The great majority of cases run a mild course, with recovery in from three to ten days; more chronic cases, with involvement of all or many of the lymph nodes may continue for months, but end usually in recovery. Occasionally a case is fatal.

Treatment: The treatment is purely symptomatic. The glandular enlargements are best treated by the local application of the ice bag or cold compresses, and painting with tincture

of iodine may do good. The usual methods for combatting pyrexia are indicated. It is important that the patient be well nourished; there are no indications for a special diet. Constipation is frequent and requires rigid attention, and it would perhaps be of great help if the flora of the intestinal canal could be changed as it is possible that the causative organism is absorbed via the lymphatics from the intestines.

Conclusion: Glandular Fever may be regarded as a syndrone, but certainly the facts do not appear to justify its classification as a disease entity. It will serve as a convenient and orderly filing place for those adenopathies which are at present unrecognized. Unquestionably in the years to come, as our knowledge of the lymphatic system and its diseases increases, Glandular Fever will probably have no place. At the present time, it appears to supply a great gap in the clinical knowledge of diseases of the lymph glands, and to furnish a satisfactory index for prognosis and treatment.

MEDICAL SOCIAL SERVICE FOR THE CHILDHOOD OF LOUISIANA.*

By MAUD LOEBER, M.D., New Orleans.

With the advent of specialization in medicine, the doctor has had less and less opportunity to come in contact with his patients in their homes. Doctor Cabot of Boston, the pioneer in social service, has happily pointed the way to the solution of this difficulty through social service agencies in hospitals; and the war has taught us how to utilize the Red Cross public health nurse and the public health nurse in cases not primarily falling under hospital care but treated rather in the community at large.

At this time one cannot valuate the good which these agencies will do in a community, not only now, but for the next generation, and those succeeding. Let us for a moment give a brief outline of the service which each can render to the patient and physician and incidentally to the public welfare.

In hospital work the social service department, through its trained social worker, preferably a trained nurse with social service training, to do that part of the work as originally suggested by Dr. Richard Cabot. Such service includes the rounding out of a complete history, the home life, environment and

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daily routine of the patient, which date frequently is not readily secured in clinic or hospital cases. To illustrate: In the case of a nervous child, it is essential that one should know the life; the persons he comes in daily contact with; his home and school obligations; his daily personal habits, as regards regularity, diet recreation, work, diversion and rest, and to determine whether they are all that they should be.

A visit to the doctor's office or out-door clinic can hardly give the doctor the essential information required on this case, but the services of an intelligent social worker can give the desired and essential data on which the physician can complete his diagnosis and outline his method of treatment.

Recently in the out-patient department of one of the hospitals of New Orleans, a baby was brought by its mother for "swollen and bleeding gums." The case, an 8-months-old negro baby, presented clinically a case of scurvy, yet the mother claimed to have included the juice of half an orange in the baby's diet daily, since the baby was 6 weeks old. A visit of the social worker revealed the facts. The mother was compelled to leave her baby with a neighbor while she worked out, and from the neighbor we learned that she had fed the infant exclusively on a concentrated condensed milk formula which she administered at irregular times and in varying quantities; that the mother had occasionally brought home an orange for the baby, but not since she, the neighbor, had taken care of the baby, which had been for several months, and during that time the baby had not had orange juice as a part of its diet. Now, with this information and the co-operation of the neighbor, the doctor at the clinic was able to reach a conclusive diagnosis, and with a corrected diet the baby made a rapid and uneventful recovery.

Such examples could be multiplied but these two suffice to illustrate the topic under discussion.

You have in your midst the same social service material to work with as we have in the City of New Orleans, and it is to your advantage that you utilize these agencies that now exist. If you are not then you are derelict, for their services are yours for the asking.

The school nurse, the public health nurse, the Red Cross public health nurse each can be and are made such valuable aids to the physicians who are dealing with children not reporting to the hospitals for treatment.

Social service can be utilized in other ways as by following up the mother at home; by supervising and making modified milk formulas or special diets; or by supervising hygiene and sanitation in the care of the baby or child under treatment; or by encouraging regular visits to the doctor or clinic, and securing co-operation of the parents in obtaining proper laboratory tests to aid in diagnosis. If the disease is contagious, suggesting the proper prophylaxis; proper living conditions for the patient and other members of the household; and regulating and directing the patient's relationship with the other members of the family.

In case the child is in a hospital ward, the social worker attempts to get in touch with the family whether in a rural community or city. They ascertain whether the home environment and care is consistent with the complete recovery of this patient.

In the case of the Red Cross public health nurse and the public health nurse, it is often a matter of education of the family. This is accomplished most satisfactorily by mothers' meetings, better baby conferences and the like, where instruction to the mothers on the care of the baby can be made a valuable asset to the local doctor who is more than anxious to practice preventive medicine and willing to co-operate in organizing these meetings on health, where he may add some points on contagious diseases —their prevention and the results of ignoring health matters. These meetings are preceded and followed by visits of the social worker to the home for the purpose of encouraging the mother and father to attend the health meeting to stimulate their interest in the advice given by the doctor or doctors conducting them.

The social workers and social agencies can aid in stimulating not only enthusiasm for special meetings but also rounding up those most neglected cases which do not seek the advice of the doctor. They can feature special clinics where the co-operation of specialists can be secured, as dentists, orthopedists, oculists, aurists, and rhinologists, and the like, who will help not only in relieving those already afflicted with a corrigible or incorrigible defect, but by aiding the medical profession in securing the co-operation of the parents and children in the greatest of all health measures—prophylaxis—and obtain medical advice and treatment in cases in their incipiency.

Boards of Health and School Boards are alive to the good which can be accomplished along this line, hence the nurse attached to the board of health whose function it is to do follow-up work, and the work of the public school nurse is too familiar to all to need further emphasis here.

It is no surprise to those of us who are dealing largely with social welfare work that in this the newer field on medical preventive work there should already be specialized work among the welfare nurses, and we find the tuberculosis nurse or social worker, the cardiac nurse or social worker, the psychiatric nurse and social worker, the baby or children's nurse and social worker, and in this group not the least among them are those who are specializing in the play movement; for in this last mentioned field is one hardly touched and certainly not fully appraised so far as its effect on the development of character training is concerned in addition to its relationship to health.

We who are practising among the children should be on the lookout to utilize more fully this splendid asset in the armamentarium of medicine, for surely we need this phase to aid us in adequately accomplishing our results in this age of specialization.

DISCUSSION.

Dr. F. J. Kinberger (New Orleans): There is no doubt that the medical man can get but little co-operation from his patients unless he has their full confidence. The same applies in child welfare work—unless the confidence of the patient is obtained we do not get results. A good social service nurse can do wonders in the home correcting formulae, outlining better hygienic rules, and looking after the patient in general. I feel that I can add nothing to Dr. Loeber's paper, except to say that she has stressed several points not only of vital importance to the physician alone but also for the general betterment of the community as a whole.

Dr. E. D. Martin (New Orleans): This education we have been carrying on for some years has probably developed into greater good than we can imagine. If it is doing nothing else it is bringing home to these people the necessity of hygiene and the importance of early diagnosis in the care of children. I do not suppose there is anyone in the state who is better equipped to speak on this subject than Dr. Loeber. For years she has taken care of this work in hospitals and asylums and we know that things she speaks of come from long personal experience. While I do not do general practice I have come in contact with people who have felt grateful for the kind words and education that is being carried to the homes. Among our poorer classes, among the people who have to work day and night and who have little time to read for social amusement, they are perfectly willing and glad to learn, but they have never had opportunity, and when a thing is carried to them in a practical way they at once take up the idea. I believe this work should be assisted in every way possible. People want education today. They are no longer willing to accept the doctor's word without any reason, but

the great thing to do is to open the eyes of these people to the necessity of taking advantage of this opportunity.

Dr. Maude Loeber (closing): I want to thank the doctors for bringing out the points that they have stressed. Dr. Kinberger has had experience along the line of welfare workers and he knows the need of them. In Dr. Martin's discussion I would like to emphasize the desire on the part of the social workers to have those physicians who are not in cities call on the public health nurses. The people at large are anxious to know something of hygiene and sanitation, and would welcome the visits of the health nurse in connection with those of the doctor. They will read a magazine that carries a page of health notes, and I think if the doctors of Louisiana at large would call on these nurses and co-operate with them the meetings they plan for the education of teachers and parents and the like they would find that the social worker has a real place among the medical men.

HYPER-EMESIS GRAVIDARUM, WITH REPORT OF CASES.*

By THOS. B. SELLERS, M.D., F.A.C.S., New Orleans, Louisiana.

Vomiting of pregnancy is divided into two types,—toxic and psychic, or reflex. It is important but very difficult to differentiate between the borderline cases.

In the true toxemic cases, there are evidences of disturbed metabolism in the blood and urine, upon which a differential diagnosis may be based. Williams was the first to show that the urine from such patients presents a high ammonia co-efficient which indicates that a much larger portion of total nitrogen is excreted in the form of ammonia than usual; normaly, four or five per cent; in toxic vomiting, from twenty to fifty per cent. Blood changes show non-protein nitrogen greatly increased above normal; urea-nitrogen, normal or slightly decreased.

Autopsy findings show extensive pathological changes, in the vital organs, such as central necrosis of the liver lobule and fatty degeneration of the peripheral cells. Pathological changes in the kidneys vary greatly from a simple exudate to a severe parenchymatous nephritis. Hemorrhage into the serous cavities and mucous membranes was observed in isolated cases.

These pathological findings should be sufficient to impress upon us the gravity of a true toxemic case and should also emphasize the necessity of an early diagnosis.

The French report a 30% mortality. Of course, the mortality varies greatly in the different clinics. The Charity Hospital records show a mortality of 43.75% for the past three years, tabulated as follows:

*Read before the Orleans Parish Medical Society, October 9, 1922.

Name	Duration of Vomiting	Duration of Pregnancy	Temperature	Medication and Treatment	Date of Admission	Days in Hospital	Results	Remarks
w. Mrs. W.....	4 mo.		103-98	Ovarian Ext. Corpus Luteum, Morphine Bromides, C. C. Pills, Chloral, Strychnine.	4-24-19	32 da.	Died	Packed but died before delivery.
w. Mrs. M.....	12 da.	3½ mo.	100.5-99	Pituitrin, Ovarian Ext. 60-gr. a day; Magnesium Sulphate.	7-24-19	27 da.	Improved.	Did not vomit 4 days before discharge.
w. Mrs. S.....	7 wk.	4 mo.	99-98	Sod. Citrate (Mouth), Glucose-Sod. Bicarb. (Drip).	2-15-20	19 da.	Improved	Did not vomit 4 days before discharge.
w. Mrs. T.....	3 wk.	4 mo.	102-98	Sod. Bicarb. Glucose by drip; Ovarian Ext. Purgatives, etc.	11-19-20	32 da.	Died	Pulmonary Tuberculosis.
c. Mrs. G.....	3 wk.	3 mo.	103-98	" " "	2 - 6-21	27 da.	Died	Pulmonary Tuberculosis, Syphilis.
w. Mrs. S.....	2 wk.	3 mo.	101-98	" " "	2 - 6-21	37 da.	Not Imp.	Deserted; vomiting day left hospital.
w. Mrs. C.....	2 wk.	3 mo.	100-98	" " "	4-15-21	35 da.	Cured	
w. Mrs. G. C.....	2 mo.	3 mo.	101-98	Calomel (Mouth), Glucose, Sod. Bicarb. (Drip).	5-12-21	10 da.	Improved	Deserted; Goitre (toxic).
w. Mrs. S.....	3 wk.	6½ mo.	103-98	Routine treatment.	6-26-21	13 da.	Deserted	
w. Mrs. M.....	6 wk.	3 mo.	100-98	Sod. Bicarb., Glucose, Bromides (Drip).	8-30-21	20 da.	Improved	Vomited every pregnancy: Nephritis.
w. Mrs. G. S.....	2 mo.	3 mo.	100-98	Sod. Bicarb. (Flush), Bromide (Drip).	3 - 2-21	16 da.	Improved	
w. Mrs. E.....	?	3½ mo.	103-98	Sod. Bicarb., Glucose, Bromides (Drip).	8-25-21	34 da.	Died	Delivered, 10-2-21.
w. Mrs. Car.....	2 mo.	3 mo.	101.5-97	Glucose, Sod. Bicarb., Calomel (Drip).	9-26-21	14 da.	Died	Exophthalmic Goitre; vomiting Prev.
w. Mrs. R.....	2 mo.	4 mo.	102.5-97	Glucose, Cor. Luteum (Hypo), Sod. Bicarb. by infusion.	11 - 5-21	29 da.	Died	Delivered, 12-3-21.
w. Mrs. S.....	?	3½ mo.	103-98	Glucose, Bicarb. (Drip), Sod. Bicarb., (Flush).	2 - 3-22	17 da.	Died	Inserted Catheters; died before delivery.
w. Mrs. G.....	?	2½ mo.	98	Corp. Luteum (Hypo.), Sod. Bicarb., Glucose (Drip), Sod. Bicarb. (Drip).	1-10-22	40 da.	Improved	Deserted, 2-20-22.

It is interesting to note that two of the patients who died had Pulmonary Tuberculosis, one of these complicating Syphilis; another case had an Exophthalmic Goitre; the remaining four had no complicating disease. Also note that those who died ran temperature from 101.5 to 103.9; three others who ran temperature over 101 deserted. Those who recovered ran low temperature.

Treatment. Start the treatment early. First make a careful anatomic examination starting at the head and especially considering the genital organs. Look for an erosion or a stenosis of the cervix and any abnormal position of the uterus and treat accordingly.

Corpus luteum and Ovarian Extract given by mouth intramuscularly or intravenously have not proved to be of much benefit in my hands. Adrenalin by hypo and by mouth was first advocated by Rebaudi. I think it helped one or two of my cases. Zuloaga declares such adrenal insufficiency can be diagnosed by a white line left after drawing the finger nail over the skin. This he declares can be relieved by the use of Adrenalin solution 1-1000.

Cray reports very good results from the use of Placental Extract. Blood transfusion has questionable results.

I am personally inclined to think very highly of the carbohydrate treatment outlined by Dr. Paul Titus. It has proven most satisfactory to me. When nausea starts up and continues through the day, start a Murphy drip using 8% glucose and 2½ Sod. Bicarb., always giving a saline flush first. Isolate the patient at once, preferably in a hospital. Keep the family away as much as possible as sympathy from them makes it hard to handle the patient.

In severe cases the duodenal tube has the greatest field of any form of treatment when intelligently and judiciously used. I used it in two cases which I am reporting. I found it quite difficult to insert in one of the cases. Dr. Raymond Hume offered the following suggestion, which helped me very much indeed. His suggestion was to give Morphine Sulphate gr. ¼ and Atrophine Sulphate gr. 1/150 forty-five minutes before inserting the tube, and to spray the nasal pharnyx and pharnyx with a 2% Cocaine Hydrochloride solution; then pull the tongue well forward and swab the base of it with a 5% Cocaine Hydrochloride

solution ten minutes before inserting the tube. I then inserted the tube into the stomach with slight difficulty. The tube was passed into the duodenum wih the usual technique.

I kept the tube in for six days giving 8% Glucose, 2½ Sodium Bicarbonate and 40 grains of Sodium Bromide through the duodenal tube in the form of a drip, alternating with a modification of Bacon's formula.

20 grams of Glucose;
125 grams of Beef Peptonoids;
3 grams of Cal. Chloride;
4 grams of Sod. Chloride;
3 grams of Sod. Bicarbonate;
Water to make 1000cc.

I continued giving the Glucose and Sodium Bicarbonate through the tube until she developed a transient glycosuria, then I reduced the Glucose and increased the other fluid until the urine was sugar free.

There are certain cases where I feel that the intravenous administration of Glucose is very beneficial. Great care should be exercised in preparing the solution, and only the very best grade of Glucose used.

If the patient still does not show any signs of improvement, in a comparatively short while, if acidosis as shown in the daily examination of urine does not improve, if vomiting of bile stained fluids and coffee ground material occurs, if yellow stain of the skin and sclera persists or grows deeper, if temperature goes above 101, if the blood pressure falls day by day and if the urine is less in amount and greater in specific gravity and with a high ammonia coefficient, the uterus should be emptied. We must not lose sight of the fact that this is a very dangerous procedure for such a bad subject.

A large per cent die before absorption is complete and many just after from shock and loss of blood. Great care should be exercised to prevent shock and the simplest methods possible used to induce abortion. Preferably give the patient nitrous oxide and oxygen as an anesthetic. Gently dilate the cervix and either pack with gauze or insert catheters. Occasionally in primiparæ where the cervix is long and hard and the patient in a serious condition, a vaginal hysterotomy should be done.

Case 1. Mrs. F., age 24. September, 1914.

Present illness: Persistent vomiting for six weeks prior to calling me. Do not know anything about the treatment during that time. Patient very much emaciated when I saw her. Unable to retain anything by mouth. I advised that she be transferred to the hospital at once, which was done.

Treatment: Rectal feeding of 5% glucose and 2½% of sodium bicarbonate, alternating with neutritive enemas, several times a day. Her condition gradually grew worse, after having been in hospital five weeks.

Physical examination: Heart and lungs negative. Well developed, poorly nourished white female. Abdomen negative. Reflexes negative. Very little discoloration of skin and sclera. No temperature, but pulse very rapid.

After consultation it was decided to induce labor. The cervix was greatly dilated, under a general anesthetic, and catheters were inserted (usual technique). These were left in for 24 hours without the desired result. We then resorted to a vaginal hysterotomy. She had a stormy recovery, but since this time has gone through three or four normal pregnancies.

Case 2. Mrs. T. S., age 29; occupation, housewife.

Complaint: Nausea and vomiting due to pregnancy. Started June 6, 1916.

Family history: Negative.

Past history: Usual diseases of childhood. Operated on twice (appendectomy and tonsilectomy).

Menstrual history: Started when 12 years old. Regular every 28 days. Flow lasted from 4 to 5 days. Pain during first day.

Married four months.

Present illness: Nausea, slight at first, but gradually grew worse. After a few days was forced to go to bed and remain in bed for 9 weeks on account of nausea and vomiting.

Physical examination: Well developed and nourished. No glandular enlargement. Reflexes normal. Heart, lungs and abdomen negative.

Blood pressure: Systolic 124, diastolic 90.

Vaginal examination: Negtive except a slight retrodisplacement of the uterus, which was easily reduced. Reduction did not influence the nausea. The skin and sclera had a definite yellowish cast which gradually grew deeper in color as the nausea increased.

Treatment: Symptomic at first. Frequent feeding night and day with food rich in carbohydrates. Small doses of calomel given every 10 or 12 days. Later, as the nausea grew worse, was forced to discontinue oral feeding and started the Murphy drip; 5% glucose and 2½% sodium bicarbonate, also peptonized milk by drip. At the end of 9 weeks the nausea stopped almost at once and she began eating a regular diet. It took from 6 to 8 weeks to regain the 40 pounds which she lost while in bed.

Two other pregnancies. First: Nausea started about 6 weeks after she missed, and continued about 3 weeks, when she miscarried without any apparent reason.

Second: Two years later. Nausea and vomiting more severe than the first. In bed 3½ months.

Treatment: Same as in the first pregnancy, with the exception of ovarian extract, which was given intravenously every day for 20 days; nausea stopped for one month and started again, but not so severe. Patient was able to retain at least two meals a day up to delivery. Just before delivery her hands and feet were very much swollen. Urine examined every week during this time, always negative, except acetone at times.

Delivered a normal child weighing 9 pounds. All symptoms rapidly disappeared. Ten days later was discharged from the hospital.

Case 3. Mrs. F., age 23; occupation, student at college. Married 1 year.

Family history: Negative for tuberculosis and cancer. Previous health: Good. Influenza and the usual diseases of childhood. Called to see me February 1, 1921, complaining of nausea and vomiting due to pregnancy. Nausea and vomiting increased in severity until February 21st she was confined to her bed and vomiting became uncontrollable. February 28th her face, neck and chest began to swell. This swelling increased until her features were distorted beyond recognition. Neck and chest were enormous. Swelling was due to an emphysema.

Examination: Well nourished, well developed white female, weighing 208 pounds. Heart, lungs and abdomen negative; no granular enlargement; reflexes normal, blood pressure; 130 systolic, 90 diastolic. Vaginal examination: External genitalia, negative; cervix, soft and not eroded; uterus, normal position about the size of eight-week pregnancy.

Laboratory reports: Urine negative, except a few casts and a trace of albumen and acetone which were found when vomiting was most severe. Total defferential blood count negative. Wasserman negative. X-ray and fluoroscopic examinations of chest negative.

Treatment: During first few days of nausea and vomiting, symptomatic treatment was ordered. Gorpus luteum, intravenously; glucose and sodium bicarbonate by drip.

February 28: Vomiting was more severe and emphysema started. We gave 500 c.c. of 10% glucose solution intravenously. This was repeated every six hours for three injections. Hypodermoclysis also given; adrenalin by hypo and mouth; morphine and atropine to keep the patient quiet. After the third injection of glucose the vomiting stopped.

The patient weighed 140 pounds the first time she was able to get up after leaving the hospital. Two and a half months later she aborted without any apparent reason or warning. The foetus was dead and appeared to be a four-month pregnancy, according to the statement of Dr. Voss, who handled the case during my absence from the city.

Case 4. Mrs. W., age 36; occupation, housewife.

Complaint: Called to see me May 10, 1922, on account of nausea and vomiting due to pregnancy.

Family history: Negative.

Past history: Usual diseases of childhood; influenza and a toxic goitre from which she had apparently recovered, with the exception of a rapid pulse (90 per minute).

Menstrual history: Negative.

Physical examination: Well developed, well nourished white female. Reflexes slightly exaggerated. Head and neck negative, except slightly enlarged thyroid gland. Heart, lungs and abdomen negative. Blood pressure: systolic, 120; diastolic, 70.

Vaginal examination: External genetalia negative. Cervix normal to touch, no erosion, no stenosis. Uterus normal position about the size of a 6 week pregnancy.

Present illness: Nausea and vomiting slight at first. Able to retain about two meals a day during the first three weeks. It gradually increased in severity, in spite of treatment. At times she seemed to be better. Was forced to go to bed about May 24. At times her pulse was very rapid, especially after a vomiting spell

(120 per minute, but after a dose of sodium bromide her pulse returned to about 90 per minute, which was normal for her.

Treatment: At first symptomatic; frequent feeding; later, as the nausea increased in severity, started rectal feeding; 8% glucose, 2½ sodium bicarbonate drip once a day. At this time she was able to retain one meal a day; I also gave corpus luteum intravenously. As the nausea increased was forced to discontinue oral feeding.

June 17: Pulse went up to 120; nausea increased in severity, was unable to retain any food by mouth. I sent her to the hospital. Inserted the duodenal tube with difficulty. I gave glucose and sodium bicarbonate by drip through the tube, alternating with a modification of Bacon's formula and Hart's Elixir; this was kept up for six days. On the second day the glucose was decreased on account of an alimentary glycosuria.

Laboratory reports: Urine negative up to June 20th, when 2½% sugar developed (at this time the glucose was reduced).

June 21: Urine showed 4% sugar.

June 24: Only a slight trace of sugar and heavy trace of albumen.

June 29: Total white blood count 9,000.

Differential: Polys, 91%. S. M., 2%. L. M., 7%.

Pulse during the past 10 days was rapid, but thought it was due to the goitre. The vomiting stopped, except at times when the tube moved and made her gag for a short time. In the early morning she would spit up small amounts of mucus.

June 28: Temperature ran to 101, but her general condition was good; temperature went to normal later in the day.

Afternoon of June 29th her condition grew decidedly worse. Vomited large quantities of coffee-ground material, the first time since the tube was inserted. Temperature ran up to 104, pulse 133, respiration 34.

After consultation with Drs. Cocram and Guthrie we decided to induce labor. Under nitrous oxide anesthesia the uterus was partially emptied and packed with gauze, with as little shock as possible. Her condition was very bad when she left the operating room and she died a short time after she returned to her room.

There is a question as to what caused the sudden change; she was fairly well nourished (as we were able to give her a great deal of fluids through the duodenal tube).

Dr. Guthrie thinks it was due to an acidosis with an acute dilatation of the stomach.

Case 5. Mrs. C., age 26; weight, 96 lbs.; occupation, college work.

Complaint: Nausea and vomiting due to pregnancy started April 25, about the same time she missed her menstrual period.

Family history: Negative.

Past history: Had typhoid fever and influenza.

Menstrual history: Started at 14 years; regular once a month, lasting from three to five days; good flow; slight pain during first day of flow. Married 8 years.

Five miscarriages.

First miscarriage: Two months gestation; vomited all the time; sent to the hospital and kept isolated; condition grew worse and labor was induced.

Second miscarriage: Six months after the first; one month gestation; miscarried; cause unknown.

Third miscarriage: Eight months later; 5 months gestation; miscarried; cause unknown.

Fourth miscarriage: A few months later; miscarried; cause unknown.

Fifth miscarriage: Two years ago; one month gestation; miscarried; cause unknown.

Present illness: Nausea and vomiting, which started April 25th and gradually increased in severity.

May 28th: She began to vomit blood. This continued day and night; she could not retain anything by mouth, and very little by proctoclysis. General condition became critical. Pulse rapid, tongue dry and coated.

Physical examination: Poorly developed, poorly nourished; no glanular enlargements. Heart, lungs and reflexes negative. Blood pressure: sistolic, 90; diastolic, 65.

Vaginal examination: Negative. Urinalysis: Several examinations were negative, except for indican and low specific gravity. Wasserman negative. Blood count, total and differential, normal. Hemoglobin, 80%.

Treatment: At first symptomatic; ordered frequent feeding of food rich in carbohydrates. Ovarian extract, intravenously, for twenty doses. Adrenalin, 5 minims by hypo. once a day; 20 minims, three a day by mouth. Did not notice any appreciable change in the blood pressure. Murphy drip, 8% glucose, 2½ sodium bicarbonate.

May 29, 1922: Inserted duodenal tube with great difficulty; kept it in for 6 days, giving a continuous drip of 8% glucose and 2½% sod. bicarb., alternating with a modification of Bacon's formula; also 40 grains of sodium bromide once or twice a day through drip, depending on her nervous condition.

June 25: Vomiting stopped and oral feeding was started; diet rich in carbohydrates.

She is troubled with slight nausea at times, but retains at least three meals a day. She has gradually regained her strength and feels better than she did before becoming pregnant. As soon as the nausea stopped, I started giving iodides by mouth and mercury rubs as a therapeutic test for lues, on account of the number of abortions. I saw her last week. Her general condition was good. Blood pressure: 95 systolic, 70 diastolic. Urine negative.

Conclusions.

1. True toxic vomiting of pregnancy is caused by definite pathological changes in the liver, kidneys, and at times in other vital organs. This is not true in the reflex and neurotic types.

2. Many cases of vomiting of pregnancy die of some other complicating disease. Some are toxemic cases; others are severe reflex or neurotic types.

3. It is essential to make a careful examination prior to starting any treatment.

4. Start treatment early in all cases of vomiting of pregnancy. As soon as the patient is unable to retain a sufficient quantity by mouth to nourish her, and keep down an acidosis, start a Murphy drip using 8% Glucose and 2½% Sod. Bicarb., also Bacon's formula.

5. All cases of vomiting of pregnancy should be put on a diet rich in carbohydrates.

6. In severe cases the duodenal tube has proved of great value; also intravenous injections of Glucose should not be overlooked.

7. Ovarian extract and Corpus Luteum have not helped any of my cases up to the present.

8. After due trial of accepted treatment, if the patient continues to lose ground, labor should be induced with as little shock as possible.

I want to thank Dr. J. K. Arent for tabulating the Charity Hospital record for me.

DISCUSSION.

Prof. W. Denis: I should like to say a few words in regard to the various chemical tests which have been suggested as being of prognostic or diagnostic value in the type of case just discussed by Dr. Sellers. The oldest and best known of these is the so-called "ammonia coefficient" test, suggested about 15 years ago by Williams. This "ammonia coefficient" is, of course, simply a term introduced to designate the per cent of total nitrogen in the urine present as ammonia nitrogen. At the time Williams elaborated his test it was believed by many that this ammonia coefficient was, in the normal individual a more or less fixed quantity. We now know that variations in diet and starvation produce marked changes in the ratio. The "ammonia coefficient" of a normal individual on an ordinary mixed diet is about 5, but it is extremely easy to push this ratio up to 10 or 15 by such ordinary procedures as starvation, low protein diet, etc. Some twelve years ago some enthusiasts in the use of this test believed that an ammonia coefficient of 12 justified abortion; of late years, however, it has been recognized that such confidence is misplaced, so that, for diagnostic or prognostic purposes, only values of 25 or over are now seriously considered. Personally, I (in company with most chemical workers in this field) think that the ammonia coefficient idea has been much stretched, although it must be admitted that the clinicians have not always been in agreement with us in this matter; and for some years I have regarded it with suspicion, not only on account of the ease with which it is possible in some subjects to produce high ammonia coefficient by simple starvation, but because of the ease with which the urea of urine splits off ammonia when the fluid is allowed to stand in a warm place without the addition of preservatives. I have repeatedly found that nurses will collect 24 hour urines and then place them close to a radiator, with the result that a very high content of ammonia is found when this urine is analyzed. Murlin, ten years ago, working under excellent experimental conditions proved that it is possible to have severe cases of true toxemia without any increase in the ammonia coefficient; others, however, have come to the opposite conclusion.

Within the past 10 years another type of chemical test has come into prominence—**i. e.,** the so-called chemical blood test. One of the most useful of these is the determination of the carbon dioxide, combining power of the plasma, the "alkali reserve" test of Van Slyke. This test is, as you probably know, designed to measure the degree of acidosis, if any, existing in the patient, and in these toxemia cases an extreme grade of acidosis is sometimes encountered. The use of this test, not only for diagnosis purposes but as a guide in the employment of alkali therapy, is apparent.

The other determinations which have been found of value are non-protein nitrogen, urea and uric acid. When these tests were originally suggested Sleemons of Baltimore reported adversely as to their use to the obstetrician. Since then more extended work by Williams in Chicago and Killian and Sherwin and Caldwell and Lyle in New York make it appear that these tests will ultimately prove of considerable value.

The uric acid determinations in particular give promise of great usefulness as a means of distinguishing between the hysterical and the true toxemic type in the vomiting of pregnancy. In the hysterical cases the blood uric acid remains at the level found in normal persons—viz., 2½ to 3 milligrams per 100 c.c. of blood, while in the toxemic cases greatly increased uric acid values (10-12 milligrams) are found. In some cases of toxic vomiting the non-protein nitrogen is also increased above normal, but this increase is not so constant or so early as is the increase in the uric acid fraction, and therefore the non-protein nitrogen determination while of value is not so important as is the uric acid test.

It has been repeatedly shown that 50 per cent of the non-protein nitrogen fraction of normal blood consists of urea. In normal pregnant women this ratio sinks to about 40 per cent, and in severe cases of toxemia ratios as low as 20 per cent have been observed. So striking is this relation that it has recently been suggested that this abnormal ratio between non-protein nitrogen and blood urea may prove of value in the diagnosis of toxemias particularly of the hepatic type.

We frequently see in these toxemia cases extreme cases of acidosis. We consider normal figure from 55 to 60. We frequently see as low as 30, or even 16. We do not get such extreme values of acidosis in hysterical cases. It has always appeared to me that this test is very good for alkaline therapy.

The other types of tests are non-protein nitrogen, urea and uric acid. When these tests were first suggested, Hooper reported rather adversely. Since then there has been much more careful work, in New York, by Williams, etc., and I think that the fact is definitely proved that these tests are of considerable value in some cases.

This is particularly true of uric acid. It has been shown by at least four different individuals that this is a favorable test. In the hysterical type of pregnancy—remains from 2½ to 3 mmgrms. per c.c., whereas in toxemia, 10 to 12 mmgrms.

The urea rises to 10 or 15 mmgrms.

The non-protein nitrogen and urea tests are of service to a few, but not quite so practical. The normal non-protein nitrogen of the human body is 13 mmgrms. In these toxemias we never get the huge 300 mml. as in late cases of nephritis. We do get from 50 to 60.

Invariably in these tests we have rather unusual conditions in these toxemias of pregnancy—namely, there is unusual different ratio between urea. In normal blood about 50% exists as urea. Even in a normal pregnant woman, it is rather low, from 40 to 30. In very severe cases of toxemia, falls as low as 20% have been observed. Tilden, etc., have advanced tests whereby we may differentiate between nephritic and **toxemic** (?) **hepatic** (?) type.

It is impossible to differentiate between the hepatic and renal type. Both are high.

Dr. P. Michinard: My reason for coming up this evening is because in my ward there was a case that had been considered one of obstinate vomiting of pregnancy. Several days ago, at the termination of my vacation, I saw in the ward a woman who is emaciated, pulse 130, temperature 100. There is an eight weeks gestation. This woman had not retained any food, and only a small quantity

of water for five weeks. During the week prior to my seeing her various experiments had been tried, such as gastric lavage, rectal feeding and administration of different drugs until abortion was considered. When I heard of all this aggressive treatment I decided to try psycho-therapy. I then had her brought to the examining room, and there, after an ostentatious examination, disclosed to my several assistants, "This woman is not pregnant." She insisted that she was. I then told her that her menses had ceased for two months because she had a severe inflammation of the womb, and that I would cure her with a powerful application. The interne was directed to apply to the womb through a speculum "some of that 'black' medicine." When she saw the bottle she exclaimed "That is idone!" We assured her it was not, but a new drug from Europe. The application was made. There was no more vomiting. She left the hospital early today after having taken and retained three meals a day. In a few weeks she will realize that she is pregnant.

It is strange many men of large obstetric practice have seen very few cases of serious or almost uncontrollable hyperemesis gravidarum. I have never yet seen one. One case might be excepted; but that at autopsy proved to be a cerebral gumma. This woman died at the fifth month of pregnancy. An abortion had been done one month before death; the vomiting continued until death. In treating such condition one should study the patient as much as the case. I believe that most if not all cases of hyperemesis occurring prior to the fifth month are of nervous origin. All after this period are pathological—either from the liver, kidneys and intestines. Dr. Eustis has truly said that much indican in the urine is very suggestive. When we consider laboratory findings such as urine changes, blood changes, etc., we must remember that these changes have been found after prolonged emesis—changes that may be found in any case of starvation and suffering. They are rather effects than causes. I do not believe that any case prior to the fifth month properly treated by psycho-therapy will ever become pathological. I could cite many causes by mental shock. Some tragic, some very amusing. One, where I was called to consider abortion, that news of the sudden death of a relation stopped the vomiting. Another, under similar condition, was caused by the sudden appearance of her husband, flourishing in his hand a mass of money, crying out for his wife, "See, Mary, I have just won $750.00 in the lottery!" No pathological condition would or could be cured so quickly by brain shock. I have used many drugs, but always with the assurance that they were powerful. I have used corpus luteum extract by needle. But often I have had good results from hypodermics of sterile water, at the time telling the patient that I was using a solution from the "egg making organ of the pregnant sow." That impressed her. The replacing of a retroverted uterus is beneficial through its mental impression, woman having been made to believe the displacement was the cause of the vomiting. Keep all sympathizing friends away. Where the vomiting is due to pathology, find the right one; treat that more vigorously than the emesis. Relieve the one; the other will abate.

I have not yet seen a case of hyperemesis that was not amenable to treatment without abortion.

Dr. Allan Eustis: I believe that if we are to accomplish anything in the treatment of pernicious vomiting in pregnancy, it must be before the perniciousness develops.

Prof. Denis pointed out that there are certain pathological conditions of the liver in these cases—and how many of us bear that in mind in handling pregnant women?

Dr. Phillips mentions diet and purgation.

Any general practitioner can watch these cases by testing the urine, and while chemical examination of the blood is helpful, it is not necessary. If you will pardon my bringing up the indican subject again, I would like to lay stress upon its importance in these cases.

Whipple in San Francisco and Opie working synchronously in St. Louis, conducted a series of experiments upon white rats which throws some light on the pathology of the toxemia of pregnancy. They produced liver necrosis in write rats by the administration of chloroform. One set of animals was fed upon meat, another upon fat in the form of suet, and a third set upon carbohydrates in the form of cereal and sugar. Both observers obtained the same results: death of all animals fed upon meat, with distinct histological changes in the liver, but none of the animals fed upon carbohydrates died, and several animals killed after two weeks showed no changes in the liver. The bearing upon the toxemia of pregnancy is stressed by both these workers, and they should force us to consider the liver in all pregnant women.

In a paper before the Louisiana State Medical Society several years ago, I laid stress upon the influence of intestinal toxemia upon the liver, and attempted to make it clear that a low protein and a high carbohydrate diet is indicated in all diseased conditions of the liver.

In earlier years, when in general practice, I have carried women who had previously been vomiting through full terms without any vomiting, and with very little nausea, simply by treating the intestinal toxemia. Therefore, I again wish to emphasize the importance of a consideration of the liver in all parturient women.

Dr. W. D. Phillips: I was very much interested in the remarks that Prof. Denis made, because I believe that it is the solution we will eventually find in this condition.

The point is: Just what causes this vomiting of pregnancy? I believe close co-operative work with the chemical laboratory will help us arrive at a conclusion.

The question of acidosis. Just what is acidosis and what causes it? Why is it that one patient will go through entire pregnancy without any marked symptoms of nausea and others will have it?

Pernicious vomiting of pregnancy is, in my opinion, nausea and vomiting of pregnancy which has been allowed to go on. If treated early it would not assume that pernicous type. Acidosis is brought on by starvation.

The theory of administering lutein extract was brought out by the fact that in the normal non-pregnant state the yellow body of the ovary gives off a certain secretion, and that during pregnancy, because of the absence of the yellow body, this secretion is modified, and it was the intention to furnish normal secretion by administering an extract made from the yellow body.

One mistake that we usually make is that we do not give enough lutein. Parke-Davis or Hyson Wescott advise 1 c.c. every day for fifteen days. Most of us give 1 c.c. for four or five days and then stop. The condition usually improves, but the trouble is that we have not carried on the treatment long enough. If necessary we can give 1 c.c. two or three times a day.

Close attention should be given to the intestinal tract by means of moderate purgation and diminishing the amount of proteids taken.

I do not recall, in my work, a single one of my cases that I had to produce an abortion on, and I have had some very protracted

cases of nausea and vomiting of pregnancy. My treatment has usually been directed toward the cause, and continued daily administration of 1 c.c. of lutein extract.

In the service of the Charity Hospital I can readily see that the more severe cases are the only usually admitted, as a case is rarely seen in the hospital until it has assumed a more or less pernicious type.

I intend to continue to use lutein extract until some better plan of treatment is suggested, because, as stated above, my results have been satisfactory.

In the neurotic type, bromides will help.

After the fourth month of pregnancy, the vomiting usually stops of its own accord.

Thomas B. Sellers (closing): I want to thank Dr. Denis for her able discussion of the blood chemistry in pernicious vomiting of pregnancy.

My experience does not tally with Dr. Phillips. I have given ovarian extract and corpus luteum by mouth, intramuscular and intravenously to practically all of my cases of vomiting of pregnancy for the past five years with very poor results. We must not forget that most of the neurotic types are relieved in about twenty days, whether we give corpus luteum or not, while the toxic cases that I have handled have not been influenced by the use of corpus luteum.

I cannot agree with Doctors Eustis and Michnard that all cases of vomiting of pregnancy are neurotic in origin. I am convinced that there are two distinct types and they start either as a neurotic or toxic case. The clinical picture, as well as, the pathological findings at autopsy, is quite definite in the two types of cases.

I agree with Dr. Eustis that treatment should be started early in all cases with a diet rich in carbohydrates. Four of the cases that I reported, I started treatment at once, giving glucose and sodium bicarbonate by drip, but it did not stop the vomiting.

I wish to express my appreciation for the liberal discussion of my paper.

LEUKEMIA, WITH OBSERVATIONS IN THE TREATMENT AND FINDINGS.*

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Leukemia has been an interesting and baffling study to the profession since it was first described by Hughes Bennett of Edinburgh in 1845. Only a month or so after this observer reported his findings Virchow of Vienna, working independently of the former, described a similar condition and spoke of the peculiar white color of the blood at necropsy. The former described the disease as characterized by a large spleen and the blood containing cells identical with those recovered from wounds —Pus Cells. He called the disease a Leucocythemia. Virchow said the white bodies were not to be differentiated from the colorless corpuscles of the blood and called it Leukemia. He

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differentiated types in which the lymph glands were affected and the spleen was not, thus distinguishing the Lymphatic and Splenic forms. He described the disease as a rare one, and even today it is not very common. It was Neumann who noted the changes in the bone marrow, and proposed the term Myelogenous.

In its occurrence Leukemia is confined to no country or geographic location. Its distribution is exceedingly widespread appearing not only in man but extensively in the lower animals. In fowl the disease appears in spontaneous form and may be transmitted experimentally. It is common in the dog and to a less degree in swine. While there is no predelection for race nor age, the incidence is far greater in the male than the female (7-3), and the various forms seem to have an age selection. The more acute forms attack before the twenty-fifth year with greatest incidence in the age periods one to five and fifteen to twenty. The myelogenous form occurs in the greatest percentage of cases between twenty-five and forty-five years while the Lymphatic form prevails between forty-five and sixty years. The disease rarely is met with after the sixtieth year although a case has been reported in an individual after arrival at the seventy-fifth year. There is no tendency to epidemics and the course is toward chronicity.

Leukemia is a hyperplasia of the leucocytic producing tissues, or as expressed by Ordway and Gorham: "Leukemia is a disease of the blood forming tissues which produce leucocytes, manifesting itself by a marked hyperplasia of these tissues, characterized clinically by a remarkable increase in the number of white cells in the blood, and by varying grades of splenic and glandular enlargement. The leukemic white blood corpuscles vary from the normal leucocyte in many instances and are pathologic unripe cells gaining entrance into the blood before maturity." Then depending upon whether the Myeloid or Lymphoid tissue has become stimulated to a state of hyperplasia either the Myelocyte or Lymphocyte becomes the predominating cell in the blood. It is upon this that a differentiation into Myelogenous and Lymphatic Leukemia has been made.

The total number of white cells in the blood will normally become increased as a response to the stimulation of infection. This increase in total leucocytes is known as leucocytosis and cases showing abnormal response of the Bone Marrow to infec-

tion producing an unusual increase in the total white blood cells must be differentiated from Leukemia. These abnormal responses will sometimes show an exceedingly high total leucocyte count approaching one hundred thousand. I recall a case of puerpal infection complicated by a broncho-pneumonia presenting a total leucocyte count of sixty-five thousand. At one time the arbitrary figure of fifty thousand leucocytes was taken as the dividing line between leucocytosis and leukemia. Today the differentiation is made upon the type of cell present. It was Ehrlich who accomplished this differentiation by the staining qualities of the cells (granular and non-granular). He also classified the types of leukemia according to the character of cell rather than the clinical findings as to the organ affected, thus enabling us to more accurately distinguish the two forms of the disease: (1) Myelogenous, with hyperplasia of the white cells of the bone marrow (granulocyte), and (2) Lymphatic, with increase of the lymphocyts series (non-granular cell). He considered the hyperplasia as metastatic from the bone marrow or lymph glands and it is upon this that the dualistic theory of the origin of the blood cells has developed. The mass of authority seems to favor this theory, thus leading to the opinion that the distinction made by Ehrlich is the rational one to follow.

Both the Myelogenous and Lymphatic forms have a tendency to run a chronic course of varying duration—two to five years. Grawitz has reported a case of ten years duration. Either type may occur in the acute form and is rapidly fatal terminating within two weeks to two months. All forms of the disease are viewed with the prognosis of sure and certain death.

The causative agent of Leukemia has not as yet been determined, but a great amount of work has been done toward this end. Since many diseases formerly of unknown origin have within the recent past proven to be caused by organisms of varying characters, the theory of bacterial origin has been advanced in the study of this subject. Itsuyoshi and Shin Ohashi have reported the finding of a microbody in a case of leukemia, but nothing of a convincing nature has come of their work. It has been considered as a progressive, malignant, and fatal disease, and some have suggested the possibility of a "Sarcoma of the Blood." However, no matter what may be the cause, we do know the power of the human mechanism which governs the regu-

lation of the production of leucocytes is stimulated to hyperactivity or the control is lost, as evidenced by the presence of an unusually large number of leucocytes in the circulation. This marked increase seems to be at the expense of the Red Blood Cells which are correspondingly diminished in number, thereby producing a striking anemia.

If the disease were of bacterial origin it would seem that there would be found in the literature the report of its transmission from one to another. The writer was unable to find mention of such, nor was there found reported the presence of the affection in more than one person in a family. The nearest to this was the report of two members of the same family suffering from Lymphatic Disease: One from Lymphatic Leukemia and the other from Lympho-sarcoma. There has been no transmission of the disease in the human, and many writers have reported that leukemia mothers have given birth to normal children. The experimental transmission of leukemia in fowls seems to be an established fact, and Schmeisser is reported to have transmitted the affection to twenty-five animals all of which died excepting one in which there was a spontaneous cure. This transmission was by intravenous and intraperitoneal injection of organ extract, but similar experiments with human material have failed. Slye found that leukemia in mice occurs only in those strains having tumors, and the disease behaves like true tumors in heredity studies.

The onset of leukemia is gradual and is usually discovered late in its course, each type presenting a rather typical and constant clinical picture. In the Myelogenous (Spleno-Myelogenous) variety the onset is very gradual, the patient often seeking advice of the physician for a feeling of lassitude, a progressively enlarging abdomen, dyspnea, or perhaps to ask about the presence of a mass in his upper abdomen which he has accidentally discovered. The most constant complaint causing the patient to apply for medical aid as determined by a review of the cases treated in the Charity Hospital at New Orleans was a feeling of fullness or heaviness in the upper left abdomen and frequently associated with knowledge of a mass in that region. Pain in the splenic region is a more constant factor than we have been led to believe. Others turn toward the doctor because of pallor, weakness, loss of weight, gastro-intestinal disturbances, dizzi-

ness, shortness of breath, or hemorrhage from either the nose or bowel. The latter, while not a constant symptom, is not an infrequent one. The symptoms tend to increase in severity and the individual's condition progresses downward. As the anemia increases there is a loss of appetite, dyspnea, cough, palpitation, tachycardia, rapid emaciation and death from myocardial degeneration. There may be periods of pyrexia alternating with apyrexia. It is not uncommon to have periods of remission during which the patient tends to improvement.

Examination reveals an anemic, pallid, emaciated individual with drawn, tired expression, abdomen prominent and enlarged, especially in the upper left portion. There may or may not be an enlargement of the superficial glandular system as this finding usually occurs late and the glands are not painful or inflamed, are freely movable and remain separate. The mucous membranes are pale, the gums are soft and may bleed, and the tonsils show enlargement. A retinitis may be present but the vision is not impaired. Sometimes a bronchitis with basal edema is present. Cardiac findings, as usually accompany secondary anemia, are present especially tachycardia, Systolic murmurs, dilatation, and associated findings in other organs which characterize myocardial weakness. The blood pressure is normal or below, with a tendency to the latter ranging between 90-130 Systolic and 70-90 Diastolic. The abdomen is enlarged with a fullness or prominence in the left upper quadrant with pain or tenderness in this region. The spleen is many times larger than normal, extending downward and forward, but maintaining its general shape, so that usually one or two notches may be detected in its right border. Its surface is smooth, even and firm to touch and may exist as a massive tumor extending into the pelvis and occupying more than three-fourths of the abdominal cavity. The liver is uniformly enlarged to varying degrees and ascites is not an uncommon finding. The ascitic fluid may contain myelocytes, mast cells and eosinophiles. There is no palpable increase in the size of the kidney though histological examination shows leukemic infiltrations, and the presence of albumen and casts in the urine is a frequent accompaniment. The total urinary output is not increased but there is often frequency possibly due to the increase uric acid content. The specific gravity of the

morning urine in cases treated in Charity Hospital ranged from 1005 to 1025.

The blood is readily coagulable and when allowed to stand after withdrawal separates itself into three distinct layers—a lower dark red, middle creamy white, and upper clear amber. The true diagnosis is made upon microscopic examination which reveals an enormously high total white count, many times ranging in the neighborhood of one million per cu. mm., with the presence of many pathologic unripe cells. The per cent of Neutrophiles and Lymphocytes is decreased while the per cent of Eosinophiles and Basophiles is increased and there is a large per cent of Myelocytes. The diagnosis lies not in the increase in total leucocytes but in the character of the immature cells (Myelocyte or granulocyte) in the circulation.

The red blood cells show a marked diminution in number often reaching the low mark of one million per cu. mm. and the hemoglobin per cent which is not altered in the early stages decreases as the disease progresses, frequently reading as low as fifty per cent. As the disease advances both total red cells and hemoglobin per cent diminish proportionately until there is a profound secondary anemia. The individual cells show an irregularity in their size, shape and staining qualities and the presence of nucleated red cells, polychromatophilia, and stippling are constant findings. In the advanced cases a picture very similar to pernicious anemia with myelocytes is encountered. The total cell counts is not an index to the severity of the disease, but as these are altered so are the clinical symptoms altered.

The bone marrow shows a marked change with the normal yellow fat marrow replaced by a firm homogenous pale yellow, gray or pink gray or greenish colored tissue. The microscopic examination shows masses of myelocytes and all kinds of leucocytes but very few red cells, showing that the erythroblastic tissue is replaced by a hyperplasia of the myeloid cells.

Lymphatic Leukemia is very gradual in its onset and it is impossible to state with any degree of accuracy the time of its beginning. However, the individual usually seeks the physician because he feels that he is growing weak, tires easily or has by accident discovered painless or enlarged glands. It is not infrequent that the physician when least expecting finds during the course of an examination an anemia with enlargement of the

lymphatic glands and spleen. In cases associated with severe anemia the accompanying characteristic symptoms of this condition may be found.

The physical examination generally reveals only a paleness with slight emaciation if any, general glandular enlargement of varying degrees, and an enlargement of the spleen and liver, to a much less degree than in the myelogenous form. The gums may be swollen and bleeding sometimes occurs. The tonsils are large and removal may be performed, which procedure may be followed by severe or even fatal hemorrhage. The most valuable and constant clinical finding is the presence of the general glandular enlargement especially of the cervical, axillary, and inguinal chains of lymphatics. The glands are not inflamed, are firm, not attached to the overlying integument, appear in chains remaining separate and freely movable. The degree of enlargement is quite variable ranging from the size of a pea to that of an ordinary walnut, and is rarely absent though some cases have been reported. The area of cardiac dullness is increased and tachycardia and palpitation are present if the disease has reached a fairly advanced state. Depending upon the accompanying anemia the myocardium becomes insufficient with the appearance of systolic murmurs chiefly over the base and associated swellings of the feet and ankles. The abdomen is not constantly enlarged though both liver and spleen present some increase in size and ascites may occur. The kidneys are not palpable but albumin, casts and red blood cells with increase of uric acid are common urinary findings.

The blood examination shows a great increase in the total white count but on the whole is much lower than in the myelogenous type, rarely reaching in excess of two hundred and fifty thousand. The differential count shows a very large percent of lymphocytes (90-95%) which appear to be identical with the normal lymphocyte but close scrutiny reveals many to possess a very thin shadow of blue protoplasm surrounding the nucleus and others are devoid of protoplasm only the naked nucleus remaining. The nucleii of these cells take a lighter stain than the normal. All other white cells are both relatively and absolutely decreased.

The total red cells are decreased in number according to the stage of the disease and as the leukemic process advances, the

diminution in the red cells continues and the Hemoglobin per cent parallels this diminution. The microscopic appearance of the red cells exhibits the picture of secondary anemia with irregularities in size, shape, staining qualities, and the presence of nucleated cells.

The bone marrow in Chronic Lymphatic Leukemia is quite different from the normal yellow fat marrow which has been replaced by dense cellular tissue of a gray or gray red color, generally homogenous with occasional nodular areas. The microscopic appearance shows a substitution of lymphoid cells for the myeloblastic and erythroblastic tissue.

The treatment of both the Chronic Myelogenous and Chronic Lymphatic Leukemia will be considered under the same heading since treatment directed against one is the same as has been found to be beneficial in the other. This phase of the disease has been both interesting and baffling to the profession since the first description of the process nearly a century ago. Many remedies and procedures have been tried in the management of leukemia and those for which best results have been claimed are: Benzol, Splenectomy, Roentgen Ray, and Radium exposure. These will be considered in the order given.

The peculiar action of Benzol in reducing the total number of leucocytes in the circulation was first noted by Santessen of Stockholm in 1897. He observed poisoning from this agent in persons working in a bicycle factory where benzol was used as a solvent, and noted a reduction in the total number of both the red and white cells in the circulation. There seemed to be a complete absence of regeneration forms with a diminution of the granular types and the leukopenia was striking. One of his cases showed a red cell count of three million seven hundred thousand with no white cells. In a fatal case in man there was found fatty degeneration of the kidney, liver and other organs, with hemorrhages into the serous membranes. In this country Selling in 1909 observed the production of Purpura Hemorrhagic from benzol poisoning in three girls working in a factory in the presence of benzol fumes. At autopsy MacCallum found fatty degeneration of the liver and myocardium, hyaline degeneration and necrosis of the Malpighian bodies of the spleen, and a distinctly aplastic bone marrow. It was not until three years later that the action of this drug on the hemopoetic mech-

anism of the body suggested its use in the treatment of leukemia. Koranyi in 1912, during his observation of poisoning from the drug, thought of its possible use in the disease and he was the first to give it a therapeutic test. He noted a beneficial effect with marked improvement of clinical symptoms, diminution in the total leucocyte count, but little recession in splenic tumor. However he found that the effect was more readily obtained with a combination of X-ray and Benzol. One case reported by him showed a reduction of the leucocytes from two hundred twenty thousand to eight thousand within three months. In 1913 he noted that large doses of the drug would give bad effect upon the red cells as well. Billings in 1913 was the first observer in America to use the drug in the treatment of similar conditions and Moynihan credits him with the opinion that benzol caused a more rapid death. Graham's case, which was under treatment for eight weeks, had a sudden fatal determination. Pappenheim has demonstrated that 4cc. of benzol will cause death in a rabbit weighing twelve hundred grams. Lafleur's case, treated by both benzol and X-ray, had within twelve months a rise in the red blood cells from three million seven hundred thousand to five million eighty thousand and the hemoglobin reached one hundred per cent. The white cells decreased from seventy-three thousand to fifteen thousand. Similar results have been recorded by other observers so there is no doubt benzol will produce a temporary improvement in the clinical picture of both Chronic Myelogenous and Chronic Lymphatic Leukemia.

The effect of benzol is first noted after one to two weeks ad-administration and should be watched closely discontinuing when the count reaches twenty thousand. Ordway has reported a case resistent to both benzol and X-ray which was affected by radium. He also calls attention to the possibility of serious toxic symptoms with fatal results after its administration. Many persons are unable to take benzol for a long period of time due to burning sensations produced in the stomach, eructations of gas, tracheitis, bronchitis, and giddiness which frequently accompany its administration. These symptoms may be obviated or diminished by administering the drug with equal parts of Olive Oil in a capsule.

Splenectomy in leukemia was first performed by Bryant in 1866 and a second time in 1867, with death of both patients. A number of cases have been reported by various authors with temporary improvement of short duration. If the spleen is removed while it is in the enlarged state the mortality is tremendous. This point was shown by Giffin who reported the total splenectomies in this affection up to 1918 was fifty-one with forty-three deaths and four dying shortly after (93%). He also reports fourteen splenectomies in patients who previously had spleen reduced by radium with no operative mortality.

Roentgen Ray therapy in the management of leukemia was first carried out by Senn in 1903. Since that time many observers have reported favorable results from its use in the disease with remissions in the clinical signs and symptoms and great improvement in the cellular elements of the circulation. Occasionally the patient after exposure to the ray will experience a reaction characterized by dizziness, nausea, and slight temperature. Again there have been reported cases who are resistent to the ray and receive no beneficial results. The action of this therapy is temporary in its effect producing decided remissions in the disease only to have the patient relapse into his former state. Beclere, since 1904, has treated ninety-three cases of Chronic Myelogenous Leukemia and twelve cases of Chronic Leukemia by this means with complete remissions of varying lengths and patients living from three to six years. These cases presented one, two, or three remisions with finally no further beneficial action from the X-ray. Use is made of the hard penetrating rays by filtering out the softer rays which by long exposure would injure the skin and superficial tissues. The general improvement is moderately rapid and there is a reduction in size of the spleen and disappearance of all clinical symptoms. The blood picture approaches the normal as regards the total cells, the appearance and character of cells present. The exact method of action of the Roentgen Ray has not yet been determined, however, it has been advanced that there is direct leucolytic action while others have suggested an action primarily on the blood plasma and secondary on the cells. The interesting work of Capps and Smith showed that when the serum of leukemic patients under X-ray treatment was injected into other leukemic patients there was a decided drop in the leucocyte count. On the other hand

when serum was taken from patients before radiation and injected into other leukemic patients there was the opposite effect. Equally as good results have been reported in cases in which the radiation was only over the spleen area as in cases where exposures were made over both spleen and long bones.

Renon, Degrais and associates made applications of radium over the spleen in cases of leukemia as early as 1910 and in 1913 reported five cases treated with beneficial results. One case had previously been splenectomized (spleen weighing 2800 gm.) with a reduction in the total leucocytes to twenty-seven thousand, but there was shortly a rise to one hundred and forty-three thousand. The use of benzol failed to benefit the condition. Radium was applied over the splenic area with a prompt reduction in the leucocyte count to 21,500. Applications were next made over the thighs with a rise in leucocytes to 81,600. Radium had been applied over the thighs in one other case with no results. These authors refer to twelve other cases treated with radium by French observers with similar favorable remissions. Ordway, in 1916, presented a case resistant to both benzol and X-ray, which showed marked improvement and remission after applications of radium. This case died fifteen months after recognition of the disease. In 1917 Giffin reported a series of thirty cases treated by applications of radium over the enlarged spleen with decidedly marked remissions. In fourteen of these persons splenectomy was performed after splenic reduction without operative mortality. Ordway reports a case of leukemia in which the red cells and hemoglobin per cent dropped while the total leucocyte count increased under the influence of benzol and X-ray. This case responded to three applications of radium with a white cell count falling from 495,000 to 5,800, and a red cell count increasing from 2,790,000 to 3,777,000, and hemoglobin rising from 50 to 90%.

Knudson and Erdos, in a study of the urine of leukemic patients undergoing radium treatment, have observed that the excretion of total nitrogen, urea nitrogen, ammonia nitrogen and phosphates is increased. The latter is enormously increased while the uric acid output is only slightly increased in proportion.

There is very little data at hand regarding the chemical changes in the blood of leukemic persons undergoing radium and

Plate I. Myelogenous leukemia, showing splenic outline before treatment by radium applications over central splenic area. (9-9-21.) Front view. (Irwin.)

Plate II. Myelogenous leukamia, showing splenic outline before treatment by radium applications over central splenic area. (9-9-21.) Lateral view. (Irwin.)

Plate III. Myelogenous leukemia after treatment by applications of radium over central splenic area, showing reduction in splenic size with improvement of general condition. 2-6-22. (Smaller outline represents splenic border this date.) (Irwin.)

Plate IV. Myelogenous leukemia after treatment by applications of radium over central splenic area. Lateral view. 2-6-22. (Small oval represents splenic outline, this date.) (Irwin.)

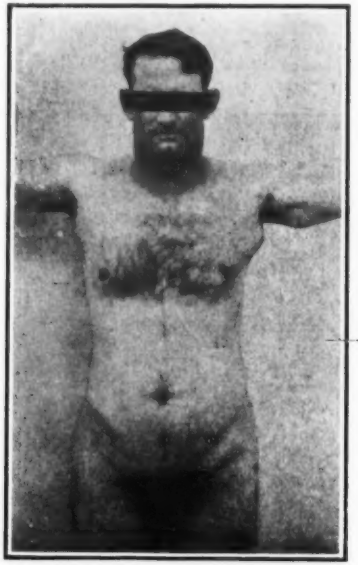

Plate V. Lymphatic leukemia, showing general glandular enlargement with prominence of the cervical, axillary and inguinal glands. 2-3-22. These have disappeared under treatment by X-ray. (Irwin.)

X-ray therapy. The work of Martin and Denis has shown that the non-protein nitrogen, which is very high after X-ray, shows a gradual but steady fall. The creatinine value is invariably normal, and the uric acid, which is much increased, shows no appreciable decrease in spite of the marked diminution in the total white cells. In a study of the blood changes of a leukemic, under radium therapy, the writer observed that the results were very similar to those found by Martin and Denis; there was a marked fall of non-protein nitrogen to normal. The uric acid was high but showed a slight decrease and the creatinine was within normal limits but also showed a slight decrease.

No case was found in the literature in which there was a failure of radium, when applied over the spleen in Chronic Leukemia, to produce a marked improvement in the clinical picture, with a corresponding remission in the disease, no matter what the previous treatment may have been. The remissions obtained are identical as those described in discussing the X-ray.

In both X-ray and radium treatment of Chronic Leukemia the Basal Metabolism Rate, which is high in this disease, is characterized by a decided fall reaching normal or even becoming a little below. The increase in metabolism, according to Grafe, runs parallel to the severity of the disease and he found it to range from 25 to 105 above the normal. The writer has witnessed a case in which the rate was 124 above the normal. Grafe attempts to explain the increase by the lively metabolism of the ever renewing white blood cells. He found in some cases more than ten per cent of the entire body metabolism consisted of oxygen metabolism of the total leucocytes of the leukemic blood.

While the treatment of the malady by the use of X-ray and radium is most gratifying temporarily and at least stimulating, there is much yet to be learned of the disease. From the progress already made, which enables us to prolong the lives of these individuals and give them clinical cures for varying periods, we may yet find in these measures the proper method of regulating the treatment so as to re-establish the normal picture more permanently. At this time we must consider the treatment as only palliative as all cases sooner or later relapse into the former state passing to a fatal ending.

As has been shown in the preceding paragraphs both types of Chronic Leukemia respond similarly to X-ray and radium, the

writer presents a case typifying the disease with remission after application of radium over the central portion of the enlarged spleen:

L. T., age 18 years., a white male of good family surroundings and possessing a keen intellect, was first seen on September 9th, 1921.

Family History—Presents nothing of value or interest.

Past History—Had measles, mumps, whooping cough, scarlet fever and chicken pox when a child. Had never had small pox, typhoid, or pneumonia, nor was he operated upon. As a child was subject to nose bleeding upon the least provocation, otherwise has been healthy and robust. One year ago was troubled with nose bleeding from no attributable cause. Appetite always good and has had daily bowel movements. One year ago had a slight indigestion which was very unusual. Denies all venereal diseases and had no urinary disturbance until one month ago. when began to have frequency associated with burning which he states is like acid passing.

Present Illness—Began in the latter portion of May, 1921, as a feeling of fullness or puffiness in the upper portion of the abdomen. Three weeks later he consulted a physician who found nothing wrong but prescribed some soda mints. The abdomen began to enlarge and after one month he discovered a mass in the upper left abdomen which gave a firmness to this area while the corresponding area on the right side was soft. Two weeks later, upon advice of a friend, he consulted an osteopath as he thought possibly he had received an injury in athletics. He received several massages without beneficial results. At this time the osteopath told him the mass was the size of an ordinary grape fruit. He next consulted a physician who had an X-ray and blood examination. The latter revealed a total leucocyte count of 440,000 with a large per cent of myelocytes, and a red cell count of 2,000,000 with hemoglobin of 70 per cent. He was now having a feeling of tiredness and members of the family had remarked that he looked thin and pale. There was slight swelling of the feet and legs so that at times he could not put on his shoes. He came to the Charity Hospital at New Orleans on September 9th, 1921.

Physical examination—Showed a well developed white boy appearing to have lost some weight. He was pale, shallow and waxy

with a weak, tired expression as though he had been sick for some time. There was a striking enlargement of the abdomen more prominent in the left half. All reflexes were normal excepting the left abdominal which was sluggish. A general glandular enlargement was present involving the cervical, axillary, inguinal, femoral and epitrochlear glands. These were not painful and were freely movable. The head was normal as to size and shape. The mouth was in a good state of hygiene with a pale mucous membrane and some increase in the size of the tonsils which were not injected. There was a foul odor to the breath. The neck shows well marked supra clavicular spaces with prominent clavicles. Anterior and posterior glandular chains are palpable but not painful or adherent. The thorax is medium large and well developed with left lower intercostal spaces and is asymmetrical. The left lower portion is somewhat larger than the right and has a bulging or flaring character as if there was something beneath pushing the wall outward. Respiration is full, regular and increased in rate, and of the thoracic type. The lungs present no abnormalities excepting that the lower border of the left is at a slightly higher level than the right. The precordia presents a diffuse pulsation with maximal impulse in the fifth left interspace two cm. lateral to the mid clavicular line. The left cardiac border is outside normal limitations with apex border in the fifth left interspace eleven cm. from median line, or three cm. outside the nipple. The cardiac sounds are bounding with a roughening character and a systolic murmur over the apex and an accentuation of the pulmonic second. The vessel walls are easily compressed and the pulse is full and regular but rapid.

The abdomen is enlarged and irregularly rounded with the left half larger and more bulging than the right, especially in its upper portion. The left flank is markedly full, the intercostal angle is increased and the costal borders are flaring with an exaggeration on the left side. An enormous mass filling about five-sevenths of the cavity is left with its right border presenting a notch and extending well beyond the median line and its lower border extending to the pubis. The entire left half of the abdomen is filled with this smooth, firm, slightly irregular mass extending upward under the left costal margin (see plates I and II). This mass, which possesses the general

contour of a massively enlarged spleen, is only lightly movable on bimanual palpation and there is slight tenderness to pressure. The dullness which is found over the mass fuses above with the cardiac dullness. The liver border and kidneys are not palpable. The extremities are negative except for edema of moderate degree of feet and ankles.

At this time the splenic outline was marked off with silver nitrate so as to preserve the original shape, etc. The pulse was 120, respiration 24, and temperature 98.3. Weight 60 kg. The total leucocyte count was 440,000 with small mononuclears 12%, large mono., neutrophiles 30%, and myelocytes 58%.

The total red cell count was 1,900,000 with hemoglobin of 70%. There was also present irregularities in size, shape and staining qualities as well as nucleated red cells. Wasserman was negative. Phenolsulphone phthaline test 85%. Urine had specific gravity of 1005 with no albumin or casts but showed a Bence-Jones Proteinuria.

Blood Chemistry: Non-protein nitrogen 100 mg. in 100cc. of blood. Uric acid 6 mg. in 100 cc. of blood. Creatinine 2.5 mg. in 100 cc. of blood. (Basal metabolism plus 73.)

9-21-21—Total leucocytes 570,000, myelocytes 65%.
9-22-21—100 mg. radium applied over central portion of enlarged spleen, using a screen of ¾ inch of wood and two mm. of lead. Four applications were made in the twenty-four hours.
9-24-21—Nose bleed without cause.
9-25-21—Non-protein nitrogen 75 mg. per 100 cc. of blood; uric acid 5.8 mg. per 100 cc. of blood; creatinine 2 mg. per 100 cc. of blood.
9-27-21—Splenic border has receded about two cm. and patient feels generally better in all respects.
9-29-21—Total leucocytes 260,000. SM. 12%, neutro 55%, myelocytes 33%. Total red cells 3,370,000. Hemoglobin 85%. Basal metabolism rate plus 47. The patient was dismissed from the hospital with instructions to report weekly for blood count and observation.

Following this application it is noted that there was a decided and prompt reduction in the total leucocytes, decline in per cent of myelocytes, recession of the spleen, and improvement in the general clinical symptoms, with a fall in the Basal Metabolism Rate, and marked lowering of the non-protein nitrogen of the blood, with slight fall in the uric acid and creatinine of the blood. The red blood cells increased in number as did the hemoglobin per cent. A glance at the accompanying chart (Plate

III) will show that seven applications of radium have been made over the enlarged spleen. After each application there was noted a similar picture as presented above, but each succeeding application only improved the picture proportionately. In other words the more advanced the clinical picture the greater the seeming effect produced. After the fifth application a span of eight weeks existed in which no application was made due to the fact that the radium was difficult to obtain and also it was desired to see how long the effect would remain. After the sixth or seventh applications all phases of the disease have been controlled excepting the total leucocyte count which has gradually risen to 54,000. This individual will receive another treatment in a day or so and undoubtedly the count will fall again. It is interesting to note that all phases act uniformly or parallel to one another.

Today the patient presents a clinical cure with absence of all symptoms, complete remission of the disease, and decrease in the size of the spleen until it is just palpable beneath the costal border. All pathologic red blood cells have disappeared from the circulation, the total red count has risen from 1,900,000 to 6,650,000, with an increase in hemoglobin per cent from 70 to 95. There has been a marked tendency for all pathological white cells to be driven from the circulation but the differential count, while nearly normal, still possesses some immature cells. The neutrophile per cent has increased from 30 to 77 and the myelocyte per cent decreased from 58 to 9. At the same time the total leucocyte count has diminished from 570,000 to 30,000. The blood non-protein nitrogen has declined from 100 mg. per 100 cc. to 45 mg. per 100 cc. The uric acid of the blood has decreased from 6 mg. per 100 cc. to 4.8 mg. per 100 cc. The blood Creatinine has likewise shown a decrease from 2.5 mg. per 100 cc. to 1.3 mg. per 100 cc.

In the management of this case it will be seen that at no time was there an endeavor to force the total white cells to a very low number as this could have been readily accomplished after the second application of radium by diminishing the interval between the second and third and fourth applications. The idea was to obtain a gradual decrease in the remission in an endeavor to see whether or not the hemopoetic system would not re-establish its control over the production of these cells.

Dates	Total White Cells	Total Red Cells	Hemoglobin Percent	Differential Leucocytes	Neutrophiles	Lymphocytes	Large Mononuclears	Eosinophiles	Basophiles	Myelocytes	Anisocytosis	Poikilocytosis	Polychromatophilia	Shadow Corpuscles	Stippling	Nucleated Reds	Non-Protein Nitrogen (Blood)	Creatinine (Blood)	Uric Acid (Blood)	Basal Metabolism	Radium
9-10-21	440,000	1,900,000	70%	....	30	12	....	....	....	58	**	**	**	**	**	**	100	25	6	x73.5	*
9-22-21	570,000																				
9-24-21	400,000	2,225,000	85%		28	11				61	**	**	**	**	**	**	75	2	5.8	x47	
9-28-21	260,000	3,330,000	85%		55	12				33	*	*	*	:	*	**					
10-10-21	350,000		85%											:	*	**					
10-14-21		4,115,000				4	7	3			*	*	*	:	:	:	42	1.1	....	x37	*
10-18-21	173,000		90%		67				7	19	*	*	*	:	:	*					
10-28-21	157,000	4,200,000																			
11-12-21																					
11-22-21	74,000	4,105,000	80%		59	4	7	1	2	26	:	:	:	:	:	:				x43	*
12- 8 -21	67,000	4,900,000	80%		47	13				29	:	:	:	:	:	:			7	x30	
12-14-21																					
12-27-21	57,000	4,700,000	85%		65	6	7	3	4	15	..	..	..	..	..	..	100	1.3		x23.5	*
1- 8 -22																					
1-10-22	43,000	5,400,000	85%		60	8	3	4	10	15	..	..	..	..	..	..					
1-18-22	30,000				75	10	4	3	3	5										x6.5	
2- 5 -22	27,000		90%		62	13	12	2	5	6	..	..	..	..	..	..				-6	
2-12-22		5,800,000																			
2-17-22	34,000				61	12	13	3	5	3											
2-26-22	32,000				77					3										-10	*
3-11-22	45,000				60	9	6	1	9	15										x6	*
3-26-22																				x2.5	
3-28-22	54,000		95%		67	8	5	3	8	9	..	..	..	..	..	..					
4- 2 -22		5,775,000															4	1.3	4.8		
4- 6 -22																					
4- 8-22	30,000	6,650,000	95%		77					9											*
5-13-22		7,870,000	95%																		

Plate VI. Table showing findings in a case (L. T.) of myelogenous leukemia, treated by surface applications of radium over central splenic area—(Irwin).

In conclusion, we have today three measures which show beneficial effect upon the course of Chronic Leukemias,—Benzol, Roentgen Ray and Radium. These all tend toward a clinical cure which is only temporary since all cases relapse after a time into the former state. Benzol should only be used in cases who have no access to X-ray or radium. It is not believed that splenectomy is justified, but if performed should be after reduction by X-ray or radium. The results from both X-ray and radium therapy are similar but those from the latter are more certain and have a tendency to longer remissions. While we have no permanent cure for the disease we can at least obtain a great improvement in the condition of the patient enabling him to pursue a normal life free of signs and symptoms for varying lengths of time and actually prolonging life. The use of X-ray and radium are the best remedies at our hands today.

Appreciation is hereby expressed to Dr. Andrew Friedrichs for his assistance by keeping up the the hemocytology; to Dr. W. Denis for chemical examinations of the blood; to Dr. Adolph Henriques for his valuable suggestions in the technique of management, for it was he who proposed the procedure of gradual reduction by applications over the central splenic area; to the Polyclinic Radium Institute, who, through Dr. P. Jorda Kahle, gave the use of the radium in the case; and to Dr. Hamilton P. Jones, for his assistance in determining the Basal Metabolism readings.

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DISCUSSION.

Dr. Hamilton P. Jones (New Orleans), opening discussion: I must commend Dr. Irwin for the hard work and painstaking care he has bestowed upon his subject and paper.

The blood chemical work and basal metabolic studies are additions of valueable data in these classes of cases, and so far as I am aware of are offered together for the first time.

While we are able to accomplish much by the use of X-rays and radium and secure apparently a clinical cure, the fact remains that the differential blood count never actually becomes normal, and it seems to me that we ought not to be too sanguine about these cases until that is also accomplished.

In considering the metabolic work done by me in cases of this type I have been very forcibly struck by the close parallels followed by the blood picture, clinical condition of patient and basal metabolic rate.

Dr. George S. Bel (New Orleans): The picture which Dr. Irwin presents means that we are dealing with a metastasis, which means that there is malignant disease somewhere else. Myelogenous leukemia is a disease primarily of the bone marrow, and the picture shown from the blood stream is a metastasis from this disease. In lymphatic leukemia the disease begins with the lymphatic nodes, and the spleen, and from there metastasises the blood stream and gives this clinical blood picture so beautifully described by the essayist. I feel that enlargement of the spleen is due to a hyperplasia, but the most interesting feature is the blood chemistry, together with the existence of the symptomatology, which we are led to believe is due to something else. Dr. Irwin stated that the uric acid was as high as 6 milligrams to 100 c.c. of blood. We all know that uric acid never exceeds 3 milligrams to 100 c.c. of blood. A correct interpretation shows that many of these symptoms may be attributed to marked anemia, but a greater proportion due to a toxic condition, both from toxemia and from chemical poisons. Shortness of breath is not only due to anemia, but to a marked increase of chemical contents which exist physiologically in the individual.

I have carefully examined Dr. Irwin's case only a few days ago. Originally this extended down across the pubes and filled the entire

abdominal cavity. His picture was one of distress and suffering with all the classical symptoms. Only three or four days ago I made a careful clinical examination and found his spleen scarcely palpable, his blood picture practically normal, the clinical phenomena less distressing and the malignant disease for a time arrested. I sincerely hope and trust that this will continue and that we may hope for better and longer action with the use of the X-ray and radium. I can recall some more cases, one of lymphatic leukemia after three and a half years, practically well, treated by Dr. H———, and a myologanous leukemia, which he is treating according to his own individual method, in which the individual looks like a new man. I hope for a great deal from the treatment by X-ray and radium. If we can do no more than to prolong life from three to seven years, we have accomplished a great deal towards suffering humanity. I want to take this opportunity to thank Dr. Irwin for the presentation of his paper in such a masterly manner.

Dr. A. Henriques (New Orleans): I have been interested in the treatment of this condition for a good many years, and formerly treated these cases with the X-ray, but on account of the results which appeared in the literature scattered over a period of years, we thought we could secure better results by the application of radium. We have worked out (Drs. Menville, McGruder and myself) what we term an original technique in the treatment of melogenous leukemia. It is not original as far as the application of radium to leukemia is concerned, but as to the dosage and point of application of the radium over a certain portion of the spleen and the intervals between the treatments, we claim priority for it. The first case we had, after one series of applications over the spleen, showed a decrease of 790,000 leukocytes in 28 days. The decrease was so marked that in the next case that appeared, Dr. Harris, who throughout these cases has made most careful counts of the blood, encouraged us to go ahead with the next case which presented a spleen even larger than that shown by Dr. Irwin. We treated this particular case by making four applications over the center of the spleen. We figured that if radium probably acted through the blood we could get the best effects by treating the center of the spleen outside. Very much to our gratification the spleen drew in from the periphery, so much so that after 15 months we cannot feel these limits of the spleen. We selected the dosage of 2200 milligram hours, reasoning that this might be a carcinomatous condition, and we selected the dosage which we had found brought the best results in certain types of cases. We selected the interval of three or four weeks between applications because we found that the spleen stopped shrinking after a period of three or four weeks. We have been making applications at these intervals, controlling our work by careful blood count. One of these cases is in good shape after 15 months, and another after 18 months. We feel justified in drawing this conclusion: that in cases of splenomegaly and myelogenous leukemia, the spleen may be reduced to such that a point that it is not palpable; also that with radium over the center four rayings is sufficient, and it is not necessary to treat the periphery of the spleen. We have noticed that distant foci in both nipples have been overcome by treating the spleen. It is not necessary to radiate the long bones. The general condition is markedly improved. We attempted to regulate the splenic function in such instances rather than to cause sudden reduction of the spleen. We have had no burns at all. There has been practically no reaction except for twenty-four to thirty-six hours when the patient complains of loss of appetite. The condition shows a tendency to recurrence unless it is treated.

Dr. E. D. Martin (New Orleans): I would like to ask if any of these cases died, and if so, what did the autopsy reveal in regard to the spleen.

Dr. W. H. Harris: These lymphatic and myelogenous leukemias, from a pathological standpoint, can be put into two groups—the lympho-blastomata and the myelo-blastoma. They are regarded by many as tumors. In the instance of these diseases, aside from the metastasis that appear in the blood stream, there occur nodules in the various organs of the body—the liver, the heart, and elsewhere. The consequence is that they are most likely true tumors of a malignant type. Again, we have the infectious theory, especially represented by the work of Bunting and Yates in Hodgkins disease. A leukemia of the lymphatic type occurs in the fowl, which is transmissible by means of filterable virus. However, we must recall that in the lower animals there are a good many infectious **granuloma** which stimulate the true tumors in the human. For that reason we are not satisfied as to just what the etiology is, although pathologists as a whole lean to the tumor theory. We know that in the application of these various rays we may obtain to some extent what the surgeon does through some of his malignancy operations—**i. e.,** he extirpates his primary nodule and his patient does well for a considerable period of time, but very often after five years there are evidences of recurrence. I have never seen anything more striking than the first case that Dr. Henriques mentioned, the man having a count of 880,000 leukocytes, which dropped down within four weeks to 21,000, with a distinct change in the patient, an increase in weight and marked improvements in the red blood system. The consequence is that we cannot but hope that good results will ensue from this source.

In regard to Dr. Martin's question, I do not know what the autopsy reports on such treated cases are, because where they die the spleen is very much enlarged and we have the same pathological picture that we would if the case had not been treated.

The red blood portion is a very striking picture, and, aside from the fact that we aid the hematopoietic system itself, we also overcome this enormous spleen which acts as a red blood cell destroyer and no doubt is destroying a tremendous number of red blood cells. When we bring the spleen back to its normal size we overcome that feature and at the same time we aid the hematopoietic system.

Dr. T. B. Sellers: I would like to report a case of lymphatic leukemia: A very close friend of mine was taken suddenly with a pain in his left side; unable to locate me at the time he called the first physician he could get. A diagnosis of pleurisy was made and left side strapped in Z-O plaster, which gave a great deal of relief. It looked like a typical attack of pleurisy. I did not remove the plaster, thinking it was a case of pleurisy.

On taking a careful history found patient had lost 60 lbs. during the past four months. He had been very much disturbed over his condition, but was afraid to consult a doctor for fear he would find something wrong with him.

I made a routine examination and found: Heart and lungs, negative; general glandular enlargement; spleen, about 4 inches below costal cartilage; urine, negative.

Blood count—Total white, 32,000
Differential white, 75% lymphocytes
Total red, 2,000,000
Hemigloben=55%

I thought, of course, it was a case of lymphatic leukemia, but with a comparative low blood count for a case of (lymphatic leukemia) I hesitated to make a diagnosis which would, of course, have necessarily given him a bad prognosis.

I had Dr. J. B. Guthrie examine him. He had another blood count made with practically the same report as given above. He confirmed my diagnosis and advised the use of either X-ray or radium over the region of the spleen and over the enlarged lymphatic gland.

We decided to use radium. The spleen was divided in squares and 100 mg. of radium was applied to every other square, after screening it with about ¾-inch beeswax, for a period of four to six hours over each square. Same technique used over the glands. I do not recall the exact number of milligram hours of radium used. About one month later another blood count was made.

Blood count—Total white, 4,000
Lymphocites, 50%
Haemoglobin=75%
Total reds markedly increased

He gained in weight and said he felt as well as he ever did.

Several blood counts were made during the past year. The last one showed:

Blood count—Total leucocytes, 20,000
54% lymphocites
Total red, 4,000,000
Haemoglobin=80%

I advised another application of radium. The first application was made one year ago this month.

Dr. Emmett H. L. Irwin (closing): I wish to thank each one of the gentlemen discussing this intensely interesting subject for their kind remarks and the points brought forth by them. The subject is so large and the time so brief that many things in this paper have not been presented here. Referring to the question of Dr. Martin, I regret to say that I have been unable to find in the literature the histo-pathologic findings in the spleen of a case of myelogenous leukemia after radium therapy. The experimental work of Lerm, reported in the Amer. Journal of Roentgenology for February of this year, shows the presence of a necrosis with surrounding endodaritis in the spleen of normal rabbits after the implantation of radium needles. I should hardly expect to find a necrosis of splenic tissue after surface application. I feel that great hope rests with radium therapy in these cases, and should we only add to an individual's life three to eight years, the effort is worth the while.

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EDITORIALS.

MOSQUITOES MUST BE DESTROYED.

Time and time again in past years this *Journal* had advocated the destruction of mosquitoes because they were not only distressing pests but also the known propagators of two serious diseases and the possible disseminators of others.

After some severe lessons, costly both in lives and in treasure, measures were taken tending to the destruction of yellow fever mosquitoes in this city, especially by means of the elimination of cisterns. Very little attention was paid to this matter in the interior of the State, however, hence, while we have been com-

paratively free from the dangerous mosquito in New Orleans, conditions have remained unchanged over the rest of the State. We say *comparatively* free advisedly for it has been generally known for several years that the stegomyia could be captured with ease in this city notwithstanding the fact that the health authorities said and apparently did nothing about it.

Were we living in a fool's paradise? Given the introduction of a case of yellow fever from the tropics (not an impossibility) would we not have had a certain degree of dissemination of the disease before becoming aware of its presence? Is it necessary to outline even what this would have meant in suffering, probable loss of life and positive financial sacrifice before the outbreak could be controlled?

It is true that the damage nowadays would not be comparable to that which used to follow in the days before the method of transmission of yellow fever became known, yet it would be surely serious enough to make it worth our while to prevent its occurrence.

The recent prevalence of dengue in this State provides a good illustration of conditions and teaches a valuable lesson if we want to read it right. According to the conclusions reached by the investigators of the State Board of Health dengue is a mosquito borne disease, the agent for its transmission being the ædes egypti, better known as the stegomyia fasciata. We know that we passed through what could be termed an epidemic of dengue in this city and State during the past few months, hence there must exist a large or sufficient number of stegomyia pretty much all over the State and an analagous situation could therefore prevail with the substitution of yellow fever for dengue.

What more need be said in order to emphasize the necessity for a vigorous anti-mosquito campaign?

We have noticed with satisfaction that our health authorities are preparing to take action in the proper direction. The entire medical profession should endorse and support their efforts while the general public should be taught to realize the importance, nay, the urgency for the timely institution and the early completion of the necessary measures.

To paraphrase the oft repeated urge of the Roman against the Carthage, the mosquito must be destroyed.

THE CHARITY HOSPITAL VISITING STAFF.

The Charity Hospital Visiting Staff is now actually in the process of reorganization. While the necessity for changes in the staff have long been recognized, the problem of reorganization is complicated by so many ramifications, that each administration has apparently "passed the buck" to its successor. With the object of procuring the best possible care of patients, the superintendent offered to the Visiting Staff a "tentative plan" for reorganization. The Executive Body of the Visiting Staff authorized the appointment by its president of a committee with full power to act in the premises.

Considering the intricacies of the problem of reorganization and the latitude vested in the committee, the selection of at least part of the committee was unfortunate. It is to be regretted that the president could not use the same discrimination in the selection of the entire committee as he did in the case of the majority.

One would have expected to see represented more men with special qualification for judging of hospital needs, by reason of their long "indoor" service or personal administrative experience. This discrepancy in the pernonnel of the committee should not, however, jeopardize the chances of adoption of the three fundamental changes embodied in the "tentative plan"—these are so palpably correct from the hospital standpoint, as well as *for the good of the patient,* that they can hardly fail of recognition, even by those members of the staff whose only hospital connection has been the out-door clinic or the occasional making of ward rounds.

The segregation of fractures is a condition long anticipated and hoped for and should be adopted irrespective of any immediate effect upon the individual member of the staff, or any previous school appointment. The benefits to be derived from this, *for the good of the patient* are so immeasurably great, that *anything* else is of minor consideration.

The same can be said of the segregation of orthopedic cases. Here again, there is so much to be gained *for the patient,* that any other consideration fades into insignificance.

The third great principle which must be recognized, *for the good of the patient,* is that staff appointments should be dependent actually , instead of nominally, upon the hospital authorities. From the administration or hospital standpoint, this is the

only logical proceedure. That the superintendent and through him the board of administrators should welcome suggestions from individuals or schools, there is no question. But the real basis for appointment, *for the good of the patient,* should be the previous record of the individual as regards personal service rendered by him to the hospital. By this means and by this means only will be procured constant, consistent attention to the patient, irrespective of whether "the class" is in attendance or not; by this means only will be eliminated the pernicious self-authorized leave of absence; by this means only will the hospital be able to retain the valuable services of an individual, if he should happen to sever his school connection; by this means only will there be guaranteed for the patient, the same attention during vacation in June or during school time in January.

Should the reorganization accomplish nothing else but the establishment of these three fundamental points it might still be said of it, that it was really, even overwhelmingly, *for the good of the patient.*

THE INDIGENT SOUTHERN DOCTOR.

Considerable impetus was given the project for the foundation of a "Home" for incapacitated and indigent doctors in the South, by the endorsement of the movement, by the Southern Medical Association at the Chattanooga meeting.

The plan originated in the La. State Medical Society. The idea was first presented to the Society by the president in his inaugural address and the matter is now in the hands of a committee which is to report to the House of Delegates at the April meeting next year.

One of the most pitiful spectacles is that of a member of the fraternity who from infirmity, disease, old age, or from a combination of unfortunate circumstances, finds that he is incapable of looking after himself in the latter years of his life. Such cases are fortunately few, but nevertheless deserve the full consideration of the profession. The movement is most laudably altruistic and it is to be hoped that every member of the Society will lend a hand for the furtherance and successful culmination of a project which will forever redound to the credit not only of the State Society, but of the entire medical profession of the South.

SOCIETY PROCEEDINGS.

PROCEEDINGS OF THE HOTEL DIEU STAFF.

Monthly Meeting for December, 1922.
The President, Dr. Homer Dupuy, in the Chair.

INTRA-ABDOMINAL INJURY.

Dr. J. M. Hountha reported the case of a male, aged 46, who had fallen from a ladder from a height of five feet, striking the abdomen anteriorly. He was seen first five days after the accident, with hiccough, nausea and vomiting and abdominal distention. The patient was well nourished. Abdominal examination revealed no tumor or tenderness anywhere. Pulse, 78; temperature, 97.6; respiration, 26. Urine examination negative. T. W.C. 21,100; Neutr. 95%. The abdomen became progressively distended. Two days later T. W. C. 23,800; Neutr. 94%. Urine showed albumin 1%. Exploratory operation decided upon three days after admittance to hospital. Mid right rectus incision. The peritoneum was opened and two quarts of serosanguinous fluid liberated. Laboratory report, fluid containing blood. Cultures were negative. No adhesions anywhere. Nothing grossly abnormal found in abdomen. Two cigarette drains left in cavity and abdomen closed. Drs. Nix, Salatich and Cirino were associated with Dr. Hountha at operation. Death occurred within twenty-hours after operation—patient vomiting large quantities of dark brownish fluid to the end. The feature of main interest in the autopsy held by Dr. M. Couret, was that the right kidney was twice normal size, otherwise normal; the left kidney consisted of an "elongated cyst" and the ureter on this side was completely obliterated. It was the opinion of the pathologist that death was due to a hemorrhage from a rupture of the left cystic kidney.

Dr. Walther pointed out that, from the history, the case appeared to be one of hemorrhage from a hydronephrotic kidney which had been ruptured by the blow. He regretted that the pathologist had not preserved the specimen. That the left ureter was obliterated undoubtedly accounted for the negative urine reports. Certainly cystoscopy and ureteral catherization would have decided the matter definitely and it was indeed to

be regretted that the urologist was not called in. A phthalein reading, which was not done, might have thrown some light on the renal function.

Dr. Chalaron could not agree with the diagnosis of "cystic kidney" as made by the pathologist and felt, with Dr. Walther, that the case was one of hydronephrosis. Autopsy demonstrated that the patient had been living off the other kidney.

Dr. Ficklen had had a case of injury with retro-peritoneal hemorrhage recover in a patient who had been stepped on by a horse. The man had marked varicose veins along the anterior surface of the thighs. Due to extreme shock and pulse study it was easy to diagnose the case. In another case, mistaken for extra-uterine pregnancy, operation revealed the left kidney at fault with ulceration of blood vessels. There was a mass in the side and had ureteral catheterization been insisted upon the case would have been diagnosed before operation.

Dr. Danna was not of the opinion that the kidney had caused the death of the patient. Whatever it was, there was something keeping up the flow of blood into the peritoneal cavity.

Dr. Bloom related a similar case, that of a little boy who had fallen off the back of a wagon injuring his side, followed by voiding bloody urine.

The day following injury urine was apparently clear. Operation revealed ruptured kidney.

Dr. Nix, who had seen the case with Dr. Hountha, considered it one of injury to the intestines. He had also considered ruptured spleen. Just before operation T. W. C. was 96,000. He felt that toxemia was the cause of death.

Dr. Couret related that he had removed a quart of blood fluid from the peritoneal cavity at autopsy besides the two quarts of bloody fluid Dr. Hountha removed at operation. He considered the death due to hemorrhage.

CYSTIC GOITRE.

Dr. C. J. Bloom presented the following case:

Clara E., age 8 years.

Family History: Negative for any hereditary disease. Four of the eight children in family died in infancy and one succumbed to injury. Father and mother living and healthy. One of four living children. One died with history of spasm. Other than the fact that the father's grandmother had goitre, there is nothing of interest in this connection. Birth and past history reveal nothing.

Past history: Had whooping cough, measles and influenza but, inasmuch as these conditions were prior to five years of age, they bear no relation to this present condition.

Present history: Patient came for observation, having had a goitre for past three or four months. She is seventh child of eight children of healthy parents. She is undersize, underweight, and apparently very anemic. Her eyes seem to protrude somewhat, although exophthalmos is not pronounced. The pupils are slightly unequal, the right pupil being larger than the left, and the protrusion of the left eye is much more pronounced than that of the right. An adenoid expression is evidenced. Her teeth are ill-kept. The two centrals are serated and the upper right lateral incisor is notched. She has eight teeth of the second set. Her tonsils are low hanging and somewhat enlarged. The goitre is rather cystic in character, and more pronounced on right side than left. Measurements taken on top of margin: Circumference is 11¾ inches.

Physical examination: Heart does not show any enlargement; pulse rate is 79 per minute. Physical examination otherwise negative.

Laboratory findings: Hemoglobin 55%, total white 16,250, total red 2,505,000, small 34, large 5, neutrophile 57 eosinophile 3, B. 1; urine, A. M., acid, 1015, F. Epith. F. pus, F. clumps; P. M., acid, 1012 m. crystals, F. Epith. F. pus, F. clumps.

The tremor when noted was negative, blood pressure normal, rhomboid sign negative.

From that time up to present Dr. Bloom has been watching size of tumor, weight and height. At this time circumference of tumor is 12 inches. Weight 44 pounds, height 47 inches.

Up to present time, no indications of pressure.

HYPOPITUITARISM.

A case of pituitary obesity (Frolich's disease— dystrophy adiposogenitalis), was presented by Dr. Charles Bloom:

Thomas M., age 12½ years, was first seen on July 25, 1922, for an endocrine disturbance and a haemophiliac tendency.

Family history: Father and mother living and healthy. Mother is 42 years of age and weighs 145 pounds; father 52 years of age and weighs 128 pounds. There is one sister his junior who does not show any particular tendency relative to these conditions at this time. Other than a sister of his mother having contracted pulmonary tuberculosis in recent years and with whom he has not come in active contact, the family history is negative in every respect. An attempt was made to bring out in the family hitsory some particular member or members who may have died suddenly of an endocrine disturbance or who may have been expressions of the various other endocrine disturbances so often met with in a case similar to this.

Birth history: Full-term, normal delivery; weighed about 9 pounds.

Past history: As far as the father can remember, the child was normal in regard to the various questions propounded concerning standing, walking, etc.

Present history: Dr. S., who referred the case, accidentally saw this child when paying a visit to the home of his parents. He had had several so-called "bleeding spells" with minor accidents and had always noticed that he had, on various surfaces of his body—particularly those where pressure was made—ecchymotic spots. Within the past two or three years the father did, on frequent occasions, mention that his son had gained what he thought was more than the average child of his particular age does in height and weight.

Simply to illustrate how one might, offhand, overlook just such a case, a superficial examination revealed the following: Height, 61¾ inches; weight, 123 pounds; head, 21¼ inches; chest, 35 inches; abdomen, 26 inches (over height, over weight); history of bed-wetting; backwards in teething; submerged, cryptic tonsils; mucous membrane of the nose somewhat congested; small genital organs with no evidence of pubescent hair; infantile voice; ecchymotic spots distributed over the entire body, particularly on the back, hips and legs. The skin is dry and somewhat bluish; the superficial fat hangs in folds, particularly in the vicinity of the mamma, extending to the umbilicus; from the umbilicus extending to the mons; and from the flanks extending to the middle of the thighs.

Following the routine examination, it was decided that this case represented a type of pituitary disturbance and, after thoroughly

Cystic goitre in a child 8 years old.
Case of Dr. C. J. Bloom.

detailing the data obtained in a rather gross way, a diagnosis of **hypopituitarism** classified as a pre-adolescent type of the subdivision of pituitary obesity, sometimes known as "Frolich's disease—dystrophy adiposogenitalis"—was made.

Symptomatology: The following symptoms were not particularly marked in this case:

1. Morning headaches, occasional gastric disturbances.
2. Marked softness and early regeneration of the teeth with a tendency to crumbling.

Those particularly marked are:

1. Slight dyspnoea which varies at times (particularly marked when excited).
2. Mild general hyperaesthesia.
3. Vertiginous attacks (of little importance).
4. Smartling and lacrimation and diminution in visual acuity.

5. Remarkable gain in weight (about 30 to 40 pounds in the last two years).

Duration: Apparently up to three years ago, the child seemed of the average weight and height. This remarkable gain in weight particularly—and to a lesser extent in height—has only been noted since the past three years.

Course: (a) Onset rather sudden; (b) as the history states, the delivery was normal and the baby was breast fed up to 9 months, with no early gastric disturbances so often seen.

Progress: The obesity has been increasing consistently until now he weighs 123 pounds. Although he has attempted to diet and has exercised a bit more than the average boy of his age, he has continued to gain in spite of all. With the gain in weight, the fat padding in and about the mamma, umbilicus, mons, etc., has been increasing in size and somewhat in distribution. The fat padding is most prominent now about the neck, mammary glands, umbilical region and over the mons.

This typical girdle obesity extending down as far as the middle of the thighs is very evident, and a fact which bears note is the comparison between the arms and legs, which are not affected as are the upper parts of the thighs.

(Genitalia and sexual characteristics and other signs will be considered under their respective headings.)

Feeding history: Breast fed for nine months, then a graduated diet with no history of gastro-intestinal disturbances.

Past history: Measles, whooping cough, frequent attacks of tonsillitis, and chicken pox. No history of operations or injuries.

Personal history: Appetite splendid (however, does not overeat). Sleeps all night; bowels regular; has been wetting the bed for a good many years (more so recently).

Examination—general: Very obese, with rather marked girdle adiposity, somewhat marked hypogastric folds and padding. The long bones of the body are short and the hands are particularly small in comparison with the body as a whole. Although the hand is rather broad (sometimes termed a "cadet" hand), still the fingers are rather long in comparison. The feet are small (he wears a No. 4 shoe). There is slight cuffing of the ankles. Other than one or two scars and a good many ecchymotic spots with a dryness of the skin and a bluish appearance of same, there are no other dermatological points of interest. There is complete absence of marked secondary sexual characteristics; axillary and pubic hairs absent. The hips are broad and full with marked padding in the lateral aspects and in the axillae. Hyperesthesia rather limited. The veins of the chest are rather prominent. The neck is somewhat short with marked fullness posteriorly. The genital organ is infantile and the testicles are each the size of a small pecan. Temperature normal.

Measurements: Height, 61¾ inches; weight, 123 pounds; height from vertex to symphysis, 26 inches; from symphysis to soles of feet, 35¾ inches; circumference of the head, 21¼ inches; circumference of the chest, 35 inches; abdomen, 26 inches; length of the arms, 33½ inches; length of legs, 35¾ inches.

Regional—Head: Hair is normal in texture but somewhat dry. Lanugal growth between the eyebrows in supra-orbital regions, only slightly marked. Head is small and rounded.

Ears: External ears are well colored; however, no tophi.

Eyes: Eyebrows and lashes are long but thin. Pupils and muscles of the eye are negative.

Nose: The bridge of the nose is small and the mucous lining is somewhat reddened.

Mouth: The mucous membrane is reddened. Tongue is somewhat large and coated; one or two teeth show a pointed lateral por-

tion, but, on the whole, there are no serrations or crumbling or decay so often noted in this type of case. The tonsils are submerged and cryptic.

Neck: Very short and veins somewhat prominent. Thyroid and glandular groups show no pathology.

Chest: There is marked axillary padding, peculiar flaring of the hips. Marked mammary development with a similar appearance of the abdomen down to the mons, the fat falling in successive ridges, more marked below the umbilicus than above it.

Abdomen: Slight sensitiveness over the entire abdomen and large folds of fat previously described. There is no pain, tenderness, increased resistance or rigidity; no tumefaction or dullness over the abdomen.

Liver, Spleen, Kidneys, Colon: Exhibit nothing unusual.

Genitalia: Have been described previously.

Extremities: Long bones are very short. Hands are small with dorsal padding, particularly on the dorsal aspects of the first phalanges. The nails are small and the fingers correspondingly long. Thighs are very full, down to the middle portion, where they then assume a normal proportion, dropping off considerably in diameter. The legs are well formed. There are ecchymotic spots present on the lower extremities. Feet are small, some padding around ankle.

Reflexes: Achilles, patellars and cremasterics present. The other reflexes are negative.

Laboratory findings: A. M., urine, acid 1015 M. Epith. F. crystals. P. M., acid 1018 M. Epith. occasional pus, trash.

Blood: Hem. 75%; coagulation 15 min. Total white 7,250, total red 3,750,000. S. 62, L. 7, N. 31, E. O. B. O.

X-Ray: Enlarged sella turcica; the anterior clenoid process not seen. Examination of the right hand shows the bones of a marked infantile type. (By Drs. Samuel and Bowie.)

The basal metabolism rate is minus 20%. (Dr. H. P. Jones).

Blood pressure: Systolic 138; diastolic 90; pulse 80.

Final diagnosis: Hypopituitarism, bilobar involvement, pre-adolescent variety, without pituitary neoplasm. The basis for the diagnosis of hyposecretion of the two lobes in this case is as follows: (1) Anterior lobe: (a) arrested skeletal development of small bones; small hands, head and sacral bones; (b) aplasia of the genitalia. (2) Posterior lobe: (a) history of sudden rapid gain in weight; (b) classical girdle and mons adiposity; (c) slow pulse, decreased basal metabolism rate.

PROCEEDINGS OF THE TOURO INFIRMARY STAFF.

Monthly Meeting for December, 1922.

The President, Dr. M. Feingold, in the Chair.

NEUROMA.

Dr. Isidore Cohn presented a case of Neuroma of the median nerve.

History: On July 12, 1915, the patient attempted to push open a glass door, the glass broke and cut her on the forearm just above the wrist. Emergency treatment consisted of coaptation skin sutures. Five weeks after the accident, she was referred to the surgical clinic by Dr. Henry Bayon because the patient had noted the loss of sensation in several of her fingers and because of her inability to extend her hand and wrist completely.

Examination: August 16, 1915, marked atrophy of thenar and hypothenar areas, atrophy of the palmar muscles as well as those of the fingers. 2. Glossiness of the skin covering palm, thumb, index, middle and ring fingers. 3. Limitation of extension of the wrist and hand.

Operation, August 31, 1915. Novocain ½ per cent was used. The median nerve was exposed above and below seat of injury. It was found enclosed in a sheath of scar tissue which was constricting the nerve. Neurolysis was then done. The palmaris longus tendon as well as the flexor tendon of the index finger were found severed and the ends retracted considerably. These were approximated and the ends sutured. At the end of two months, she was able to completely extend her wrist. Sensation was improved.

September, 1916,, she noted a recurrence of pain and a swelling which was painful under the scar of the previous operation. She was advised to discontinue exercises, particularly piano playing. Believing this painful mass to be a neuroma, Dr. Van Wart was consulted and he confirmed the opinion. On April 11th, 1917, a general anesthetic was administered—the median nerve was exposed, neuroma was found, the mass being about one inch in length.

The nerve was cut well above and below the new growth and the two ends of the nerve were approximated—silk sutures were used. The wrist was put into position of palmar flexion and a dorsal plaster splint applied so as to maintain the position of palmar flexion. On May 18th, she had a complete return of sensation—touch as well as pain. She was not at this time able to distinguish between hot and cold. Since 1918 she has been able to do the work of an operator in the Western Union Telegraph office, using her typewriter without difficulty. Her muscle power has improved gradually until at the present time the grip in the injured hand is almost as good as in the opposite hand.

Dr. Cohn said that when doing nerve suture, there should be as little tension as possible on the suture line—this was accomplished in this case by placing the wrist and hand in the position of palmar flexion. 2. There should be no pressure on the suture line. In order to accomplish this, the splint that was used was applied to the dorsum of the hand and not on the palmar aspect. 3. Delayed nerve suture in this case gave as good a result as might have been gotten by an earlier suture. 4. It should be accepted as a principle in the treatment of lacerated wounds, that an examination should be made at the time of the primary treatment to determine whether there has been an injury to nerve or tendons and where possible primary suture of the injured nerve and tendons should be done.

TUMOR OF MEDIAN NERVE.

Dr. Cohn presented a case with a Tumor of the Median Nerve.

The pre-operative diagnosis was neuro-fibroma, Recklinghausen's Disease.

Treatment: Resection of median nerve for removal of neuroma. End to lateral implantation of distal portion of median nerve into ulnar nerve. Result: Return of sensation in the distribution of the median. Case Report: Mr. J. C. Patient referred from Medical Clinic because of a lump in his right arm which has been present six to eight months. He says that it followed sudden strain; he was not immediately incapacitated. He continued to work as if nothing happened. No immediate swelling nor ecchymotic areas. Since accident pain has become more acute. He has noticed loss of muscle power in that he could not raise heavy articles as before. Apparently right fore-

arm is larger than left. Carrying angle is diminished. Circumference of left elbow is 11½, right 11. Left wrist 7½ and right 7¼. Middle of forearm, left 10½, right 9. No limtiation of supination or pronation or flexion, but there is some extension. Diminished power of flexion of right wrist. Atrophy of thenar muscles as well as pain. Difference in color of fingers. Glossy as compared to left hand and skin of right hand is soft as compared to left. Hyperesthesia of thumb, index and middle finger.

Examination of tumor: On inner aspect of right arm about 2 inches above internal condyle is a mass which extends down to internal condyle, forward to the level corresponding to insertion of biceps. Mass, hard, tender to touch, not adherent to skin. Slightly movable. Skin movable over it. Mass is not pulsating and is definitely on inner aspect medial to the biceps muscle.

Operation: Incision about 3½ inches long on the inner side of the biceps muscle corresponding to the course of the brachial artery. As soon as the soft tissue was dissected away, muscle retracted, the large mass with the blood vessels came into view. The median nerve was isolated above the level of the tumor and a pair of forceps insinuated between the brachial artery and the median nerve to act as a support. After this the dissection of the tumor which was continuous with the median nerve was carried on and the mass was entirely separated from the brachial vessels. It was shown to be a spindle shaped mass about 2½ inches in its long axis and ¾ of an inch in the transverse axis. In one place on the outer aspect of the mass, it had broken through the sheath of the nerve and at this level the tumor had a bluish hue as though there had been a slight hemorrhage. The lower limit of the tumor was just above the bicipital fascia.

Novocain was injected into the median above the level of the neuroma and a section made of the nerve above the level of the tumor. Then the nerve was sectioned below the level of the tumor. This left a distinct gap of about 3½ inches. It was impossible to consider an elongation of the nerve to close the defect, and, therefore, the question of where to graft the distal end was considered. It was decided to utilize the ulnar nerve. This was exposed behind the internal condyle and the nerve isolated and mobilized. With a pair of forceps, a tunnel was made under the Pronator Teres. The median nerve, distal

end, was brought through the tunnel and grafted into the lateral aspect of the ulna. Fine silk was used. The central end of the nerve, which was cut, instead of leaving unattached, was sutured to the internal cutaneous which was exposed in the wound. The wound was sutured in tiers, fine catgut used to approximate the muscle to the subcutaneous tissue and then Michel clips for the skin. Two silk worm gut sutures were used and the exposure of the ulnar nerve was sutured with plain catgut. Gross section of neuroma showed that it contained a good deal of connective tissue and some degenerative areas which look like colloid material, looking like a sarcoma.

Dr. Lanford felt that it was difficult to get the true idea of how the specimen looked by examining it in the gross as it had been split open and, too, the illustration was not quite true. It was cylindrical in shape, measuring about 10 cms. in length by 3 cms. in thickness at its widest portion. The upper extremity was made up of the nerve itself and the individual fibres could be made out stretching over the bulbous portion of the growth, coming together in the lower extremity as small fragments of their original size. There was about its middle portion an oval very much congested mass which was very cellular in appearance. On sectioning, there was relatively little resistance to the knife and the cut surface presented a cellular appearance of pinkish gray color showing many areas of a dirty, yellow necrosis. There was no suggestion whatever of the gross pictures of Von Recklinghausen Disease. On studying the microscopic sections it was found the growth is made up of embryonal epithelial cells which were differentiated into glandular acini, and the picture was that of an adenocarcinoma.

The origin of this growth was quite obscure as primary adenocarcinomas do not occur in the nerve structure and there was no evidence of a growth elsewhere in the body which would explain this as a metastasis. It was hardly conceivable that this growth could be produced by a cell, epithelial in character, that would carry during embryonal development from the central nervous system. It was difficult also to think that certain of these nerve cells had reverted to the embryonic state and instead of forming nerves had formed a glandular structure.

Dr. Cohn reported that the patient had sensation in the thumb, index, middle and ring fingers at the present time and

gave evidence of return of muscle power, as noted in his grip. He was also able to differentiate between hot and cold. He was able to make a fist.

In studying nerve injuries reference to anatomy must be made in order to determine what particular portions of the nerve are involved. In this case the atrophy of the upper portion of the forearm was accounted for by disturbance of the branch to the pronator teres. The median supplies by muscular branches all superficial muscles of the front of the forearm except the flexor carpi ulnaris. The anterior intercosseous supplies the deep muscles of the forearm and the flexor longus pollicis. The palmar cutaneous branch supplies the skin over the ball of the thumb and the integument of the palm of the hand, the digital branches of course supplying the fingers which were involved. The result in the case of lateral implantation seemed to bear out the work of Ernest Sachs who claims that lateral implantation is equally as satisfactory as end to end suture. It is necessary to control hemorrhage before suture. Sachs recommends the injection of salt solution into the end of the nerve rather than catgut ligature. Catgut and silk are advocated by separate groups of surgeons. Most of the work of Dr. Cohn, was done with silk, and he found very little if any bad results following the use of silk. One should avoid traumatizing the nerve wherever possible. Tension on sutures was to be avoided. In order to this, flexion of the elbow is desirable.

Dr. Maes felt that the important point to be brought out by the cases was the excellent functional result, and some of the features commented on from the operative side. Large experience in nerve suture during the war forced the conclusion that the use of fascia lata and other methods of tubulization were unnecessary. Dependendence was placed on minimizing, scar tissue and relief of tension. It was often feasible to bury a sutured nerve in healthy muscle so as to avoid any external pressure. Some of the points brought out by Sachs in his recent article were worth calling attention to and rather simplify nerve suture. Tubulization with veins or any other substance seems to be unnecessary. He thought Dr. Cohn's results were excellent.

NERVE SUTURE.

Dr. P. G. Lacroix reported the case of a girl who was hurt on May 2nd, 1922. She had severed the ulna and median nerves, palmaris longus, sublimis digitorum, flexor carpi radialis and ulnaris tendons.

He also showed another similar case which happened in 1921. The wound also was on the right wrist. The patient had fallen on a milk bottle. At present, he also has good function. Sensation to heat and cold and to pointed objects was normal.

A wound about one inch long was found, debrided and then enlarged. The median and ulna nerves were cut and also the palmaris longus, sublimus digitorum, flexor carpi, radialis and ulnaris tendons. The tendons were sutured by using fine black silk and the nerve was sutured with 00 chromic gut, trying to go through only the nerve sheath. Following this the hand was immobilized with a plaster splint in palmar flexion. Sensation was normal in all of the fingers except the ring and little fingers two months later. After three months, sensation returned in all fingers (Aug. 17). When last seen, sensation was normal to heat and cold and to pointed objects. The gripping power of the right hand was equal to the left.

In the second case the wound was just about one-half inch long. The same procedure was followed. The wound healed by first intention. About March 8th he had sensation in the fingers supplied by the median nerve.

The little and ring fingers did not have sensation until May 4th, 1921. More trouble was experienced with this case than the other because of flexion of the distal phalanx of the ring and little fingers. This was finally overcome and at present the function of the right hand was normal. Sensation was also normal.

The important point in these two cases was not to be misled by the size of the wound as it was never an index of the extent of the injury to the soft tissues; second, the part should be immobilized to relieve the tension from the suture line.

SYNDACTYLISM.

Dr. Lacroix also showed a case of Syndactylism of the ring and middle finger of each hand. She was the only one in the family who had the condition. The right hand had been oper-

ated on while the left had not. He said there were four types of syndactylism, the simplest being just a membrane between the two fingers; the second, an extension of the normal web in which class this case belonged; third, where the union consists of skin and fascia fusing the two fingers into one with only one nail for the two, and, fourth, the most severe type, an osseous union of all the bones of the hand.

This case was operated upon under general anesthetic. Didot's operation was performed using palmar and dorsal flaps. An incision was made over the mesial aspect of the ring finger; another over the lateral aspect of the middle finger; the palmar flap was then sutured to the middle finger and the dorsal flap sutured to the ring finger. Many operations had been devised for this ranging from the splitting of the membranes to the more complicated plastics as used in this case. The hand now had a normal appearance.

NEWS AND COMMENT.

AT THE ORLEANS PARISH MEDICAL SOCIETY was celebrated the Pasteur Centennial, on December 11, 1922. The program follows "The Life of Pasteur," Oliver L. Pothier, M. D.; "Pasteur's Contributions to Chemistry," Hal W. Moseley, M. Sc.; "Pasteur's Influence on Bacteriology and Pathology," John A. Lanford, Ph. G., M. D.; "Pasteur's Influence on Hygiene," William H. Seeman, M. D.; "Pasteur's Influence on Medicine," Joseph D. Weiss, M. D.; "Pasteur's Influence on Surgery," Herman B. Gessner, M. D.; "Pasteur's Influence on Gynecology," Edward L. King, M. D.; (Pictures of Tomb and Institute of Pasteur).

ON DECEMBER 12, THE SEMI-ANNUAL MEETING OF THE FIFTH DISTRICT MEDICAL SOCIETY MET IN MONROE. Dr. Paul J. Gelpi, New Orleans, and Dr. J. L. Scales, Shreveport, delivered addresses.

DR. WM. T. PATTON, NEW ORLEANS, at the annual meeting of the Kiwanis Club of New Orleans, was elected president of that body. Dr. T. B. Sellers was elected one of the trustees.

AT THE RECENT MEETING OF THE SOUTHERN SURGICAL ASSOCIATION, held in Memphis, and presided over by Dr. C. Jeff Miller, New Orleans, the association elected Dr. Urban Maes, New Orleans, its treasurer. White Sulphur Springs, Va., was selected as meeting place for 1923 meeting.

WORK ON THE PROPOSED PROFESSIONAL BUILDING FOR PHYSICIANS, in New Orleans, has been suspended as a result of refusal of the city to grant a building permit. It appears that several petitions had been presented city authorities from those residents in the vicinity of Prytania and Delachaise streets, against the project.

THE ORLEANS PARISH EYE, EAR, NOSE AND THROAT CLUB, at its annual meeting, elected the following officers: Dr. A. J. Weil, president; Dr. Wm. T. Patton, vice-president, and Dr. C. A. Bahn, secretary-treasurer.

DR. K. E. MILLER, SURGEON, U. S. P. H. S., has been detailed by Surgeon General Cummings to Louisiana to aid in the campaign against the dengue fever.

THE OUACHITA PARISH MEDICAL SOCIETY, at its annual meeting, in Monroe, elected the following officers: Dr. J. W. Walsworth, president; Dr. C. H. Moseley, vice-president, and Dr. P. L. Perot, secretary-treasurer. Dr. G. M. Snelling was elected delegate to L. S. M. S. meeting in 1923.

DR. JOHN F. OECHSNER, PRESIDENT OF STAFF OF CHARITY HOSPITAL, New Orleans, is discussing with a special committee ways and means for better and more systematic care of the patients in said institution. The hospital staff will probably be reorganized also. It is planned to reduce the number of chiefs of services. A separate fracture service in the hospital will be created. To accommodate this new service the committee will consider the proposed erection of a new building which will cost approximately $100,000.

THE CHILD WELFARE ASSOCIATION, New Orleans, recently opened a new maternity clinic at 1900 Franklin Ave. Dr. E. L. Zander is in charge.

THE UNION INDEMNITY CO., NEW ORLEANS, has opened a new surgical clinic at its headquarters, 826 Union Street. It will be operated in furtherance of the Louisiana Workmen's Compensation law which grants workmen a maximum compensation of $250.00 for treatment in addition to such damages as his injury might entitle him to.

THE HOTEL DIEU, NEW ORLEANS, will soon have a new additional building to cost $750,000. The six story addition will face on Tulane Avenue and will double the capacity of the institution, making it the second largest hospital in the city.

MISS KATE GORDON, one of the leading public spirited women of the Crescent City, recently, in an address before the Young Men's Business Club, pointed out the urgency of a tuberculosis hospital for New Orleans and scored the many critics who have been obstructing the project.

THE ENTIRE LIBRARY OF THE SHREVEPORT MEDICAL SOCIETY is to be donated to the public library of Shreveport. This was recently decided by the Society when the new officers were elected at its annual meeting. Those elected are: Dr. L. H. Pirkle, president; Dr. W. P. Butler, vice-president; Dr. C. C. Sims,

vice-president; Dr. R. T. Lucas, secretary, and Dr. L. C. Spencer, treasurer.

At the Annual Meeting of the Orleans Parish Medical Society, held December 12, the following officers were elected for the 1923 term: Dr. H. W. Kostmayer, president; Drs. R. Lyons, Elizabeth Bass and F. J. Chalaron, vice-presidents; Dr. L. Ledoux, secretary; Dr. J. A. Lanford, treasurer; Dr. S. C. Jamison, librarian; Drs. W. Durel, L. L. Cazenavette and P. T. Thibout, additional members of board.

The Department of Health, New Orleans, has opened a free clinic in the City Hall Annex. Dr. W. H. Reilley will be in charge of the venereal clinic, and Dr. J. C. Cole will be in charge of the tuberculosis clinic.

American Radium Interests have made arrangements with the Belgian government whereby radium, at a greatly reduced price, will be available for use in all hospitals. In exchange America will furnish Belgium with costly instruments required in connection with the use of radium in scientific research.

Dr. Rudolph Matas recently returned from abroad after attending the Thirty-first Congress of French Surgeons in Paris, October 2-7. He read, by invitation, a paper on "End results of operations for aneurisms and other lesions of blood vessels of the extremities." He and Sir George Makins, of London, opened the discussion on the reports by Prof. Leriche of Lyons and Moure of Paris. Dr. Matas and Dr. Albee, of New York City, were the only invited American guests at the Congress. Dr. Matas was elected one of the Honorary Presidents of the Congress.

Dr. Amedee Granger was in Detroit, Mich., the week of December 3 to 10 attending the annual meeting of the Radiological Society of North America. His paper and his exhibit on "A new method for the positive identification of the sphenoid sinus and the ethmoid cells" created a great deal of interest.

The Annual Meeting of the Radiological Society of North America, held in Detroit, Mich., December 4, 5, 6. 7 and 8, was very well attended. A large number of highly interesting articles covering the entire field of X-ray diagnosis and therapy

were read, and the scientific and commercial exhibits were unusually instructive.

Honorary Degrees were conferred upon Dr. Francis H. Williams, of Boston, and Dr. Francis Carter Wood, of New York City, and Gold Medals were awarded to Dr. Maud Slye, of Chicago; Dr. Percy Brown, of Boston; Dr. Marie Curie, of Paris, and Dr. Gosta Forsell, of Stockholm, Sweden.

Dr. Russell D. Carman, of Rochester, Minn., was elected President; Dr. Rollin H. Stevens, of Detroit, Mich., vice-president elect; Dr. Manly J. Sandborn, of Appleton, Wis., secretary-treasurer. Dr. Robert H. Millwee was elected one of the vice-presidents.

Rochester, Minn., was selected as the next meeting place.

THERE WAS HELD IN JACKSON, MISS., October 30 to November 2, a Health Officers Institute. It was agreed that the Institute would be held in Louisiana in 1923.

TO THE EDITOR: I am endeavoring to make a complete study of the distribution of human actinomycosis in this country. The number of cases reported in the literature is suprisingly small, and I know that the disease is not so rare as is sometimes thought. I shall greatly appreciate hearing directly from any one who has had experience with this disease, and desire to know concerning case histories the following: age, sex, occupation, residence, state in which the disease was contracted, location of lesion, duration of symptoms, and any special points of interest connected with the treatment, outcome of the disease, or necropsy findings. A. H. Sandford, M. D., Mayo Clinic, Rochester, Minnesota.

IN THE 8TH CONGRESSIONAL DISTRICT. A called meeting of the Rapides Parish Medical Society was held at the Baptist Hospital Monday, November 20th for the purpose of reorganization of the Hospital Staff. The reorganized Staff takes form as an executive and a visiting body. The following four chiefs of service were elected by the society to serve for the year 1923:

Medicine, Dr. C. J. Gremillion; Surgery, Dr. R. O. Simmons; Gynecology and Obstetrics, Dr. J. L. Wilson; Specialties, Dr. E. R. Gandy.

Dr. Gandy was then elected chairman of the executive staff, and each department chief selected a suitable number of physicians to serve in his division.

Those doctors not serving on the executive body will constitute the visiting staff of the Hospital. All General Staff proceedings will be actively participated in by members of both bodies alike.

On Friday, December 15, Dr. Ralph P. Evans and Miss Barbara Neal were united in marriage by Rev. Dr. O. W. Bradley at the First Methodist Church in Alexandria. Dr. Fayette C. Ewing and Dr. George C. Antony acted as groomsmen.

During the war Dr. Evans was at first stationed at Camp Beauregard, then sent overseas. He subsequently located in Alexandria to resume civil practice. Miss Neal is a popular and highly accomplished member of one of Alexandria's most prominent families. The Journal heartily extends its best wishes to the happy couple.

Dr. Paul Foster, of Opelousas, motored to Alexandria, Shreveport and Grand Cane during the first week in November on business.

Dr. J. S. Branch, of McNary, was in Alexandria attending to business affairs, Monday, December 11.

Dr. Paul J. Gelpi was a most unexpected and welcome caller at this office recently. He attended the weekly luncheon of the Rotary Club as the personal guest of Dr. Clarence Pierson.

This office will appreciate appropriate news items sent in by any member in its jurisdiction not later than the 14th day of any month.

In the 6th Congressional District: At the last meeting of the East Baton Rouge Parish Medical Association the following officers were elected for the ensuing year: Dr. W. R. Eidson, president; Dr. R. B. Wallace, vice-president; Dr. T. C. Paulsen, secretary and treasurer. Delegates: Drs. E. O. Trahan; alternate, W. H. Pipes; W. R. Eidson; alternate, G. W. Sitman. Program Committee: Drs. Rufus Jackson, Lester Williams, Guy Riche.

At the Charity Hospital, New Orleans. The Interne Corps of Charity Hospital is made up of forty-two graduates of medical schools. Of this number, two are women, the first women to spend interneships here, and it is with a great deal of interest

that their work is being watched. They are proving successful and in every way are fulfilling the duties which the men internes perform.

The work of the hospital has grown so rapidly that we have had to use a great many more internes than formerly. Our accommodations have not kept pace with this growth, so that it has been found necessary to rent outside quarters for the overflow from the dormitory in the Ambulance House. One of the great needs of Charity Hospital is adequate interne quarters. The administrators hope to supply this need in the near future by erecting a home which will be equipped with a library and other essential features.

CHAIRMEN OF SECTIONS for the meeting of the Louisiana State Medical Society, April 10, 11, 12, 1923:

Section on Dermatology.....Dr. R. A. Oriol, New Orleans
Section on Medicine and Therapeutics.....Dr. A. E. Fossier, New Orleans
Section on Bacteriology and Pathology.....Dr. J. J. Wymer, New Orleans
Section on Eye, Ear, Nose and Throat....Dr. A. L. Whitmire, New Orleans
Section on Urology.....Dr. M. H. Foster, Alexandria
Section on Nervous Diseases.....Dr. E. E. Evans, Jackson
Section on Public Health and Sanitation..Dr. Merrick Swords, New Orleans
Section on General Surgery...Dr. T. H. Watkins, Lake Charles
Section on Radiology.....Dr. L. J. Williams, Baton Rouge
Section on Pediatrics.....Dr. M. S. Picard, Shreveport
Section on Gynecology and Obstetrics....Dr. H. E. Bernadas, New Orleans

NEW ORLEANS POLYCLINIC, Graduate School of Medicine, Tulane, announces a very promising attendance for the current session, matriculation at this time being on a par with previous sessions. Physicians representing twenty states and one foreign country (China) have already enrolled.

MISS BETSEY LIBBEY, supervisor of the Philadelphia Society for Organizing Charity, gave a series of Round Table conferences during the past month on case work, which included in her discussions the following: Gathering data for a Social diag-

nosis; The Unmarried Mother; Behavior problems of difficult children; Neuro-Psychiatric case. The series was given under the auspices of the educational committee of the Social Workers' Conference of New Orleans. The conferences were largely at tended by the Social Service workers of New Orleans and others professionally interested. The committee hopes from time to time to have other speakers of note address the members. Much credit is due Miss Mary Railey of the Childs Welfare, Mrs. Dickinson of the Social Service Department of Touro Infirmary, and Dr. Walter J. Otis of the Social Service Department of the Charity Hospital for the success of the meeting.

THE SOUTHERN SURGICAL ASSOCIATION met at Memphis, Tenn., December 12, 13 and 14. The following doctors from New Orleans attended this meeting: Dr. S. M. D. Clark, Dr. Isidore Cohn, Dr. H. B. Gessner, Dr. L. H. Landry, Dr. U. Maes. Dr. E. D. Martin, Dr. R. Matas, Dr. C. J. Miller and Dr. John Smyth.

THE FIFTH DISTRICT MEDICAL SOCIETY held a meeting in Monroe, December 11th, which was well attended. This was a very interesting meeting, showing great activities in this District. Dr. C. P. Cray was appointed president and Dr. C. H. Mosely, secretary, both of Monroe.

AT TULANE MEDICAL SCHOOL (Undergraduate). The ten honor pupils of the senior medical class of Tulane University will be presented with keys Sunday by the Stars and Bars Society of the university. Presentation will be made by Dr. Rudolph Matas at the annual meeting in Hutchinson Memorial building at 11 a. m. The public is invited.

The students elected to the society this year and who will receive the keys are:

Miss C. B. Barrett, M. S. LeDoux, T. P. Frizzell, M. D. Hargrove, Mrs. S. E. Huchaboy, K. A. Morris, Miss G. S. Ham, F. L. Loria, J. Sicomo, and C. O. Lorio. Dr. Isidore Cohn was elected from the faculty and Dr. Robert A. Lambert of the pathological department of Yale from the alumni.

REMOVAL: Dr. R. F. de Rouen, from Zenorin to Clarence, La.

DIED: Dr. Martin Luther Sexton, aged 64, died in New Orleans, December 1, 1922.

BOOK REVIEWS AND NOTICES.

All new publications sent to the JOURNAL will be appreciated and will invariably be promptly acknowledged under the heading of "Publications Received." While it will be the aim of the JOURNAL to review as many of the works accepted as possible, the editors will be guided by the space available and the merit of respective publications. The acceptance of a book implies no obligation to review.

Practical Chemical Analysis of the Blood, by Victor Caryl Myers, M.A., Ph.D. Illustrated. C. V. Mosby Co., St. Louis, 1921.

This manual of practical chemical analysis of the blood by Victor Myers is a very valuable and welcome addition to the literature upon this subject, which all branches of medicine are turning to for the furtherance of their unsolved problems, and any suggestions from a worker so well known as Victor Myers is considered an acquisition. The book is rich in methods, both of his own and of many other well known workers, leaving the choice largely to the laboratory technician himself. At the end of each chapter there is a carefully compiled list of references which makes the work extremely helpful in broadening one's scope of the subject discussed. Not the least in value is the very brief but very clear and well selected discussion of the various pathological conditions in which these methods of diagnosis and prognosis are applicable. This alone makes the book worth many times its price to the practitioner as well as to the pathological chemist. M. P. B.

Physiology and Biochemistry in Modern Medicine, by J. J. R. Macleod, M.B., assisted by Roy G. Pearce, A. C. Redfield, N. B. Taylor and by others. Fourth edition. C. V. Mosby Co., St. Louis, 1922.

Macleod's Physiology and Biochemistry in Modern Medicine is too well known among physicians and students to need lengthy discussion. It is written with a clarity and charm which is often lacking in a text-book. The new fourth edition combines all of the changes and advances which have been made up to the present time in this ever-widening field of endeavor, with those of the previous editions. This edition commends itself especially because of its additional information concerning such vital subjects as those on the "output of the heart," "causes of the alterations of the acid-base equilibrium of the blood," "the normal electro-cardiogram" and "the movements and emptying of the stomach." Incorporations of recent works have been made, notably that upon intracardiac pressure and pancreatic diabetes, etc. Much credit is due to the publishers for the unusual attractiveness with which the book is presented. M. P. B.

Nursing in Eye, Ear, Nose and Throat Diseases, by A. Edward Davis, A.M., M.D., and B. Douglas, M.D. Second revised edition. F. A. Davis Co., Philadelphia, 1920.

The authors, realizing that "A little knowledge is a dangerous thing," have thoroughly and interestingly outlined the nurse's duties before, during and after operations on the eye, ear, nose and throat. Several chapters are rightly devoted to remedies and their applications. Of great practical value is the space devoted to what should be done in emergencies. First aid in hemorrhages, eye burns, cocain and atropine poisoning is fully considered. There is not a word, however, on foreign bodies in the eye. Why? So important a subject should be covered in the next edition. The detection of hemorrhage following nose and throat operations is given ample discussion. This is opportune, for the nurse can be responsible for the

unnecessary sacrifice of a life. This manual, with its many excellent features, must prove a reliable guide to the nurse. H. D.

A Treatise on Diseases of the Skin for Advanced Students and Practitioners, by Henry W. Stelwagon, M.D., Ph.D. Ninth edition, with the assistance of Henry Kennedy Gaskill. W. B. Saunders Co., Philadelphia and London, 1921.

The ninth edition of Stelwagon's Treatise on the Diseases of the Skin is probably one of the best publications of its kind in the English language in America. It is thoroughly comprehensive, well illustrated and very valuable from a bibliographic standpoint. It is much more valuable to the practitioner than to the student. H. E. M.

PUBLICATIONS RECEIVED.

C. V. Mosby Co., St. Louis, 1922: Physical Exercises for Invalids and Convalescents, by Edward H. Ochsner, B.S., M.D., F.A.C.S. The Practice of Preventive Medicine, by J. G. Fitzgerald, M.D., F.A.C.S., assisted by Peter Gillespie, M.Sc., C.E., M.E.I.C., and H. M. Lancaster, B.A.Sc.

J. B. Lippincott Company, Philadelphia and London: I Believe in God and in Evolution, by William W. Keen, M.D.

The Caxton Press, Cincinnati: Pharmacopeial Drugs, Volume 1, Vegetable Drugs, by John Uri Lloyd.

Medico-Legal Journal, New York, 1922: The Female Impersonators, by Ralph Werther-Jennie June ("Earl Line")

Washington Government Printing Office, Washington, D. C.: U. S. Naval Bulletin, Vol. 17, No. 5; Public Health Reports, Vol. 37, Nos. 44, 45, 46, 47, 48; Public Health Reports, Vol. 37, part 1, Nos. 1-6, January-June, 1922.

REPRINTS.

The Sequelae of Epidemic Encephalitis; Medical Teaching in Non-University Hospitals; The Irregular Practice of Medicine; Exogenous Causes of Multiple Sclerosis, by Lewellys F. Barker, M.D.; **Setting Forth the Purposes, Merits and Worth of the American Legion and Other Associations,** Special Address, by Geo. Soule, LL.D.

MORTUARY REPORT OF NEW ORLEANS.

Computed from the Monthly Report of the Board of Health of the City of New Orleans, for November, 1922.

CAUSE	White	Colored	Total
Typhoid Fever	3	1	4
Intermittent Fever (Malarial Cachexia)	1		1
Smallpox			
Measles			
Scarlet Fever			
Whooping Cough	1		1
Diphtheria and Croup	5	2	7
Influenza	3	1	4
Cholera Nostras			
Pyemia and Septicemia			
Tuberculosis	26	28	54
Cancer	33	8	41
Rheumatism and Gout			
Diabetes	6		6
Alcoholism			
Encephalitis and Meningitis	2		2
Locomotor Ataxia	4		4
Congestion, Hemorrhage and Softening of Brain	17	19	36
Paralysis	1	2	3
Convulsions of Infancy		1	1
Other Diseases of Infancy	17	9	26
Tetanus	1	3	4
Other Nervous Diseases	5		5
Heart Diseases	62	48	110
Bronchitis	4	2	6
Pneumonia and Broncho-Pneumonia	12	27	39
Other Respiratory Diseases	3	1	4
Ulcer of Stomach	3		3
Other Diseases of the Stomach	1	2	3
Diarrhea, Dysentery and Enteritis	8	6	14
Hernia, Intestinal Obstruction	4	2	6
Cirrhosis of Liver	5	1	6
Other Diseases of the Liver	4	2	6
Simple Peritonitis			
Appendicitis	5	1	6
Bright's Disease	19	19	38
Other Genito-Urinary Diseases	2		2
Puerperal Diseases	5	5	10
Senile Debility	1		1
Suicide	2	1	3
Injuries	18	23	41
All Other Causes	25	31	56
Total	308	245	553

Still-born children—White, 18; colored, 29; total, 47.

Population of City (estimated)—White, 295,000; colored, 110,000; total, 405,000.

Death rate per 1000 per annum for month—White, 12.53; colored, 26.73; total, 16.37. Non-residents excluded, 14.28.

METEOROLOGIC SUMMARY (U. S. Weather Bureau).

Mean atmospheric pressure 30.12

Mean temperature 66

Total precipitation ..... 3.38 inches

Prevailing direction of wind—northeast.